CITY GOVERNMENT.

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CITY GOVERNMENT.

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SPECIAL NOTICE.

City officials and friends of City Government visiting New York are cordially invited to make the office of City Government their headquarters during their stay in the city. Desks, stenographers and stationery are placed at their disposal, and their mail may be addressed in our care.

WANTED—A few copies of City Government of November, 1896, for which 25 cents a copy will be allowed. City Government Pulishing Co., Troy, N. Y.

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UNDERSTANDS HIS DUTY.

One of the most efficient fire chiefs in this country, and a man who understands his duty, recently wrote:

"I believe anyone who is unwilling or unable to spend $3 a year for such a publication as "City Government," to keep himself abreast of the times on matters of public business, is not fit for the public service."

This was written by O. G. Marjenhoff, chief of the fire department of Charlestown, S. C.

A NOTE ON OUR POLICY.

A correspondent inquires if this paper is "committed to the policy of municipal ownership of public service industries." We reply that this paper is not committed to anything except the publication of such facts and views as will assist city officials to discharge their duties in the best light obtainable. Whether the facts pertaining to the operation of a public service plant make a favorable or an unfavorable showing for municipal ownership they are presented in these columns. We are unwilling to pervert or suppress facts, no matter what deductions may be made from them. We are always ready, rather anxious indeed, to publish the story of a municipal failure—because it is the failures in this world that furnish some of the best lessons.

NEW YORK ALDERMAN COMPLIMENTED.

On the evening of June 28, at a largely attended meeting of men of all political parties, a testimonial was presented to Alderman Elias Goodman, of New York city, in recognition of his successful efforts in organizing in 1896 the Allied Political Clubs of New York city for the purpose of working for better primary laws, and in getting the desired laws passed within three years. The testimonial is in the form of a book in which the history of the movement for the primary laws from its inception is detailed. Appended are the autographs of many prominent men of this city and state.

Alderman Goodman is one of the most intelligent and progressive men in public life in the metropolis, and he has been justly complimented many times by his fellow citizens. In fact he has had so many good things said of him that we think he would enjoy a little "roast" occasionally by way of diversion.

COMPETITION IN THE TELEPHONE BUSINESS.

The Home Telephone Company, which was recently granted a franchise to establish an exchange in Rochester, N. Y., is now fighting out its case with the Bell concern in the state courts. John A. Barhite, who represents the Bell interests, brought an action as a taxpayer against the Home Company and the city council "for the purpose of preventing waste and injury of the property and funds of the city." The Home people demurred to the complaint of Mr. Barhite, the demurrer has been argued and the decision of the court is now awaited with interest. When the decision is given, "City Government" will publish the particulars of the case. Meanwhile we want to remark that the telephone business is a natural monopoly, no matter how many companies are given the right to establish plants. Competition in this line runs naturally to combination or ruination. Presuming that there are two exchanges in a city and one or the other is not approaching

bankruptcy, but both are receiving their share of the public patronage at profitable rates, the result is to place upon many business houses the necessity and burden of maintaining a connection with both systems. It seems that the best policy is to have but one exchange and see to it that the rates charged are fair and reasonable.

A SATISFIED CITY.

Mr. C. A. Ballou, of Danville, Va., has added to the literature of the day a most important pamphlet, it being his official report as city engineer and superintendent of the water, gas and electric light plants. The report is important because it shows the unusual condition of a municipality being satisfied with the quantity, quality and cost of its water and light service. Danville is one of the very few cities in this country which have municipalized the water, gas and electric light industries and taken onto themselves, as bodies politic, the responsibility of satisfying the public with these services. Mr. Ballou's report shows that the people of his city have no complaint to enter against the operations of any of their public plants. The gas department has gone through the year with only three complaints of "bad" gas, and the trouble in each of these cases was found to be in the service pipes. Since the city has been operating the plant the gas rate has been reduced from $4.00 to $1.00 per thousand feet, and a further reduction to 75 cents is in contemplation. The electric lighting service has also been entirely satisfactory and arc lamps for street illumination have been provided at a cost of $21.23 each per year. Danville boasts of an abundant supply of pure water. The intelligent management of the water works is attested by the fact that rates have in recent years been lowered 66 per cent., and a reduction of 33 per cent. from the present scale is now warranted by the financial conditions of the department. The city government of Danville might be studied with profit by the people of cities where the lighting and water services are low in efficiency and high in cost.

POLICE SIGNAL SYSTEM NEEDED.

One of the crying needs of New York city, in the borough of Manhattan, is a police signal system. Readers of this paper, being familiar with the progress of municipal service, will be surprised to hear that the largest city on the continent has probably the most antiquated and inefficient police telegraph plant in existence. The borough of Manhattan, which comprises the old city of New York, is entirely without the modern telephone and telegraph equipment that promotes the efficiency of the police service in nearly all of the smaller cities.

Chief Devery, in his annual report, said: "The best results from patrol work can be obtained only under a system that will allow inter-communication between the officers in the station houses and the men on the various posts, and that such a condition may be brought about as soon as possible, I respectfully recommend to your Honorable Board the consideration of a project for providing the various precincts with a telephone system by which the patrolmen on post can call up the officer in charge of the station house, and that officer can in turn, when occasion requires, call the officer on post to give him instructions."

The chief is right as far as he goes, but he should have urged the adoption not only of telephones, but of a complete and up-to-date police telegraph system. With a force of more than 6,000 patrolmen the best of service can never be secured until the telephone system recommended by the chief is introduced in connection with a telegraph system by the use of which policemen on posts may signal their central stations every half hour during the day and night. By the use of the modern police signal system now in operation in most of our cities the commander at a central station can locate every patrolman in his precinct at almost any minute.

MUNICIPALIZATION OF STREET RAILWAYS.

The commission headed by Governor Pingree, which was to buy and operate the street railways of Detroit for the city, has been put out of existence. The Supreme Court of Michigan has decided that the McLeod act, under which the commission was appointed, is unconstitutional. This decision will put an end, temporarily at least, to the movement for the municipalization of the Detroit street railroads.

While the people of Detroit have for years enjoyed a most intelligent and competent administration of their municipal affairs, it is doubtful if they are willing to have the city take unto itself the management of such an enormous enterprise a sthe street railway system, the successful operation of which requires the services of men of special technical training who must be familiar with the multitude of small and important details. The street railway business in this country has within a decade advanced beyond the wildest dreams of those who were in it and understood it thoroughly ten years ago. The rapid improvement in every branch of the service cannot be credited altogether to the men in the operating departments; no small share of the credit must go to the administrative heads of the various railways. Of course it is possible for a municipality to employ experienced and competent men to superintend the operation of a railway system, but that it can assume the administrative functions and bring forth the same results as are now shown by the experienced heads of these vast enterprises is extremely doubtful.

With all the respect we have for Governor Pingree we do not believe that a street railway under his administration would give as good service and financial results as would be shown by the same railway under the administrative care of a Tom Johnson.

PINGREE'S "ABSURD SCHEME."

Under the expressive and harsh caption of "Pingree's Pet Throttled," the Rochester, N. Y., "Post-Express" publishes this bit of editorial wisdom:

The indications are that Governor Pingree's absurd scheme for the municipal ownership of the street car railroads in Detroit has been "put to sleep." At a meeting of the Common Council on Tuesday evening, the committee to which it was referred made a report but without recommendation. Without any discussion the report was ordered printed. Although the council can call it up, it is not likely to do so. The hot debate that the scheme has provoked appears to have convinced the majority of the aldermen that the inhabitants of Detroit want nothing of the kind.

From one point of view, this disposition of the matter may possibly be regarded as unfortunate. There are a good many people in this country that have no respect for the experience of the past, that are incompetent to interpret the experience of the present, that must have a particular experience of their own to make them wiser. They refuse to think that the fact that state ownership of railroads in this country has been tried and failed miserably has any significance for them. They cannot see that the constant failure of government to conduct business enterprises successfully has any bearing upon municipal ownership. They believe that in some way never explained by them nor anybody else the politicians that have charge of our city government throughout the country can be entrusted with the management of street car railroads. Nothing will satisfy them but a trial.

Had the Common Council of Detroit adopted Governor Pingree's scheme, they would have obtained the experience that they stand in need of. They would have found in the end that this experience would have been just as disastrous and costly as the experience of Missouri and some other states with the construction, ownership and management of steam railroads. The scheme would have proved a big job from start to finish. Upon the realization of this fact, the inhabitants of Detroit would have done as the people of Missouri and the other states did, namely, sell out to private parties, pocket their loss, and live the rest of their lives somewhat wiser if not richer.

The "Post-Express" does not display a disposition to credit the advocates of municipal ownership with a particle of common sense. To say that "there are a good many people in this country that are incompetent to interpret the experience of the present," and point straightway at the municipal ownership champions, is nothing short of cruelty.

AN UNJUST DISCRIMINATION.

A new electric light and power company has been formed at South Bend, Ind., for the purpose of entering into competition with the old company for a share of the electricity business of that city. The new concern is now seeking a franchise from the council, and the members of that body, being imbued with the idea that franchises should be made remunerative to the municipality, are showing a disposition to insert a clause in the ordinance providing for a payment to the city of a per centage of the grantee's gross earnings. Here is one of the exceptional cases where a public franchise may justly be granted without the exaction of any direct money return to the city. It happens that the franchise of the electric company now operating in South Bend does not provide for any compensation whatever to the municipal corporation. Furthermore it is understood that the contract is unlimited and unchangeable. This condition of the relations of the old company to the city makes apparent the injustice of requesting the new concern to enter the field encumbered with fixed financial charges from which its competitor would be free. The payment of even a small percentage of its gross earnings into the public treasury by the new company would at once place the desirable competition on an unfair and unpromising basis.

If it is posible to place upon the old company a similar tax on its income, we would say to the council of South Bend that it is their duty to provide for the payment of a percentage of gross earnings to the city by the new corporation. But as the existing contract is unlimited and unchangeable, it seems to be clearly the duty of the council to permit the new company to enter the field with a contrat that will not, in effect, levy an inequitable tax upon two competitors in the same line of business. In this peculiar case the people of South Bend should be content with the benefits they

will enjoy from competition in the electricity business in their city, without looking for a direct money payment into their public treasury by the imposition of a tax that would be an unjust discrimination against one of the competitors.

MUNICIPAL ENGINEERS.

It is a lementable fact that the tenure of office of municipal engineers, having in their charge such important works as the improvement of streets, the construction and maintenance of sewers, the supplying of water for public use and the collection and disposal of city wastes, is altogether too uncertain. In this connection it is worth while to print here an extract from the address made by W. Harpur, Borough engineer of Cardiff, upon the occasion of his recent election to the presidency of that old and honorable British organization known as the Incorporated Association of Municipal and County Engineers:

One of our chief objects should be the improvement of the status of the municipal engineer and surveyor.The surveyor is one of the oldest recognized officials of local government, his duties are so wide and varied as to be absolutely indefinable, and in the exercise of those duties, if carried out fearlessly and honestly, he cannot at times avoid coming into conflict with the burgesses and occasionally with the members of his own council. In addition he is entrusted with the expenditure of very large sums of money. In his address last year yor president told you that between 1871 and 1896 the Local Government Boara nad sanctioned the borrowing by local authorities for expenditure upon permanent public works a sum exceeding £150,000,000, and the greater portion of this vast sum has been expended by the municipal engineer, but this does not include the moneys expended under the Parlimentary sanction, nor in the up-keep of works, properties and institutions and of numerous small public works carried out in the large cities and towns and, very properly, paid for out of the current income.

But what is the standard set up by some local authorities for an officer whose duties are so great and responsible, and whose work is ceaseless? It almost makes one blush sometimes to read advertisements inviting applications for appointments where it is clearly set out that candidates must be duly qualified engineers and surveyors, and capable of undertaking all the requisite duties of the office of surveyor to a borough, or urban or rural district council, as the case may be, while the salary to be paid is only equal to that of a common laborer. There are no special advantages attaching to the office of municipal engineer and surveyor. He is liable to be removed from his office by the caprice of councillors through personal dislike for the official, and, if so removed, he has little or no chance of again securing a public appointment, while his training and past experience leave him very little hope of obtaining a livelihood by any other means. The appointment does not carry with it any provision in case of enforced retirement through old age, sickness or other cause.

Another ground of complaint is that the Public Health Acts do not require the appointment of duly-qualified persons to hold the office of surveyor, and, as a result, it frequently follows that the appointment is not made upon the standpoint of merit, but becomes one of personal influence, and that, as a consequence, too often the person appointed is in no way competent to undertake the duties of the office. It is therefore time that some standard of qualification should be fixed for these appointments. The men who are to be entrusted with such onerous and responsible duties, and with the expenditure of such vast sums of money, should be qualified for the appointments they hold by a thorough training for the duties to be performed—they should be properly trained engineers and surveyors. This, I think, will be agreed to by everyone present. It is also essential that they should have had some considerable amount of their training in the office of a municipal engineer and surveyor. If such a training is completed by securing a certificate of this association, I know of no better guarantee of the fitness of a candidate for holding the office of a municipal engineer and surveyor.

Every word uttered by Mr. Harpur is applicable to the existing conditions in the United States. Here the disproportion often found between the remuneration on the one hand and the city engineer's responsibilities and duties on the other is even wider than it is in Great Britain. There is also in America absolutely no real security of tenure, the engineer usually passing in and out of office concurrently with the success and defeat of the political party to which he belongs. Generally speaking the municipal engineers in this country are duly qualified persons, but they are hampered in their work by the interference of partisan interests. The municipal officer having in charge the planning and execution of street improvements for which thousands and in many instances millions of dollars of public funds are expended annually and to whom must be entrusted the health of the people, so far as it is effected by the water supply, the sewerage system and the garbage handling, should, when he displays compentency for this important work, be adequately remunerated and assured that his tenure of office does not depend upon any political influence whatever.

EDITORIAL COMMENT.

The "swearing off" process reduced the personal property assessment in New York city from $8,000,000,000 to $545,806,565. What a relief swearing must be at times!

Philadelphia needs to have its public water supply purified. A plant capable of filtering the quantity of water actually used could be built for about $3,000,000, while a plant of sufficient capacity to purify the additional amount of water wasted would cost nearly $8,000,000. Still Philadelphia hesitates to adopt to meter system.

The Albany Street Railway has been the cause of considerable damage to the water mains and service pipes of the Capitol City, and contrary to the rule pays the bill for all repairs without legal proceedings. This is the first instance of the kind which has come to the notice of "City Government." There may be others.

The automobile has already attracted the attention of the Chicago council. An ordinance has been introduced to give a certain automobile company a 20-year franchise to operate its stages on the Chicago streets. It is not clear to us why any special franchise should be granted for the operation of automobile vehicles, which differ from other carriages only in motive power. It seems that automobiles should be licensed as other vehicles are, and then a general ordinance might require an additional payment to the city of a percentage of the gross earnings of all vehicles carrying passengers for fare.

For the student of municipal affairs abroad an invaluable work is the "Municipal Year Book," published by Edward Lloyd, Lt'd., 2 Salisbury Square, London, E. C. The book is issued every year and the edition for 1899 is now ready. It contains a brief, yet comprehensive description of the government of English towns, with a separate chapter devoted to the municipal government of London, which differs widely from the government of other towns. Complete lists of the officials of all the "great towns" are contained in the volume. Probably the most interesting and valuable feature of the work is that which gives brief historical and statistical facts relating to such municipal industries as the supply of water, gas and electricity, the management of tramways and the erection of artisans' dwellings and lodging houses. The cost, indebtedness, fixed charges, revenues, disbursements, etc., of municipal plants are given for every town in the United Kingdom. Public baths and wash houses, public libraries and museums, markets and refuse and sewage disposal works in all of the principal municipalities are treated as to manner of construction, method of management and cost of maintenance.

In the United States, where so many erroneous and misleading statements have been uttered from the platform and the press regarding municipal affairs in Great Britain, the "Year Book" should have a wide circulation. By a perusal of the volume many Americans who have given some attention to city affairs on the other side may receive the reliable information they need in order to set themselves right.

New Small Parks for Chicago.

Five new small parks are to be established in the thickly populated districts of Chicago. The council finance committee has so recommended, and the work will be pushed through as rapidly as possible. Although there are at present almost a score of small parks, squares and triangles in Chicago, it is conceded that their number should be increased as much as the public finances allow, especially in such neighborhoods as are thickly populated and are far from the large parks. After long consideration of the subject it was decided that certain real estate owned by the city but not used for public purposes could be sold and the revenue derived applied to the purchase of small squares, which could be cleared of houses, platted and made beautiful with trees, flowers and fountains at small expense.

Henry Hopkins and His Successor

Henry Hopkins, the well-known inspector of lamps at New Haven, Conn., has had his successor appointed, but refuses to give up his office. Mr. Hopkins claims that he cannot be removed without being given a hearing on any reasons that the mayor may designate for his removal. Frank P. Cafferty, who has been named as his successor, will probably have some difficulty in securing possession of the office.

—The Columbus, Ohio, council recently passed an ordinance authorizing the director of public improvements to accept eight hours as a day's work.

—A portion of the swellest residence street in St. Paul, Minn., Summit avenue, is to be paved with brick. The remainder of the avenue has a sheet asphalt pavement.

—Weehawken, N. J., has made a four-year contract with the North Hudson Heat, Light and Power Co. for seventy-eight arc electric lights at $100 per lamp per year.

FIRE DEPARTMENTS.

Fire Chief's Convention.

That there will be a large attendance at the annual convention of the International Association of Fire Engineers, to be held at Syracuse, N. Y., August 22 to 25, is a foregone conclusion. Chiefs all over the country are already preparing for the journey to the convention city, showing that the interest in their old and successful association is never lagging.

The International Association of Fire Engineers is more than a quarter of a century old, and its work has had a tremendous influence in building up the magnificent fire service that nearly every American city boasts of. Included in the membership of the organization are chiefs of the fire departments of all the important cities in the country. These officials are in the organization for the purpose of keeping abreast of the times in the important work of protecting life and property from the ravages of fire—a purpose that is as purely unselfish and it is laudable.

At the annual convention of the association the members are enabled to exchange experiences and views pertaining to improvement in the fire service, and such an exchange must necessarily prove beneficial to all concerned, especially to the public whose property is under the protection of the service. The topics placed on the program for discussion at this year's convention, a list of which has already been published in this paper, are of the utmost importance.

Chief Quigley, his assistants, and the fire commissioners of Syracuse, portraits of whom appear on another page, are working hard to make the convention a great success as far as the local end is concerned. The program of entertainments has not been completed as yet. It will include a carriage ride about the city one day, an outing at one of the resorts another day and many other amusements between the sessions of the convention. Care will be taken not to have the entertainments interfere with the business of the association.

An important feature of the convention will be the exhibition by manufacturers of all the latest and best fire department apparatus and supplies.

Toledo Fire Department Report.

The fire commissioners of Toledo, Ohio, in their annual report to the mayor and council, call attention to the necessity for the appointment of a building inspector. The report says: "The board feels confident that if the city had such an official, who could have the necessary powers and not be controlled by political influences, he would prove of inestimable value to the city—both as to life and property. If necessary this department could furnish men qualified to perform the duties required, and we trust, if no better way suggests itself, your honorable body will pass the legislation giving it at least a trial."

Chief Wall, in his report, which is for the year ended March 31, 1899, gives the following figures: Number of alarms, 423; total loss, $662,538.82; insurance paid, $658,888.82; number of fires confined to buildings in which they originated, 336; number of fires extending beyond buildings in which they originated, 11. Deducting the two largest fires, that of the Dow-Snell Co., whose building was packed from cellar to roof with groceries, and windows being blocked made it very difficult to get a stream into the building, loss $213,778.30, and that of the Union Elevator Co., caused by an explosion, instantly enveloping the entire building, loss $324,541.67, the total loss for the year would be only $124,218.85. The department has in service eight steam fire engines, three double-tank chemical engines, fifteen hose carriages (eight of which are combination chemicals), four hook and ladder trucks (one aerial) and one water tower.

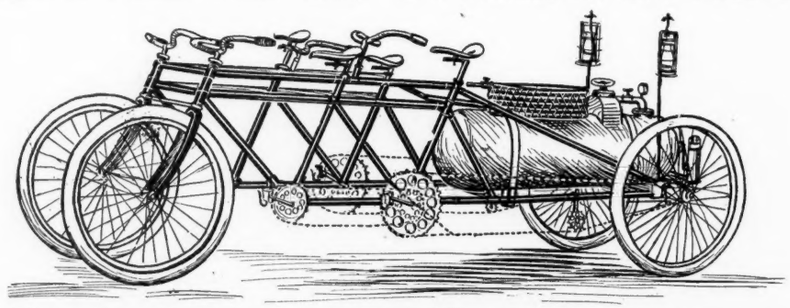
Chief Wall embodies some plain talk about "carelessness and crookedness" in his report, from which we quote: "The person who permits his residence or place of business to become filthy, cellars or basements filled with cobwebs, old paper boxes, and rubbish of all kinds, is guilty of criminal carelessness. The person who deliberately puts a match to his place (for the benefit of the insurance) is guilty of criminal crookedness, and there is not much difference between the two. A good building inspector who would cause a few arrests for carelessness and a competent insurance inspector who would say to his company, 'do not be so fast to pay losses,' would, I believe, have a wholesome effect in both cases."

A Bicycle Chemical Engine.

The bicycle has at last been adapted to the fire service. A new invention by Mr. A. W. Dolfini, of New York, produces what might be appropriately called "the twentieth century" chemical engine—an apparatus that will serve every purpose of any chemical fire extinguisher and has the additional merits of unprecedented speed and economical maintenance. This new apparatus consists simply of an ordinary chemical tank mounted on a frame of steel tubing, heavy steel tubing, joined and braced so as to give it more than sufficient strength to bear the riders, the tank and the other equipments. The burden of weight on such a vehicle in service would amount to about 1140 pounds—four men of an average weight of 160 pounds, the tank and equipments weighing about 500 pounds. The first machine built by Mr. Dolfini was given a trial several days ago. As the tank was not ready to be placed in its position, board seats were fixed on the rear end of the vehicle. Then eight men—four of whom operated the pedals and four of whom sat on the improvised rear seats, rode the machine from the Dolfini shop in Brooklyn to Coney Island and return, a distance for the round trip of about twenty miles. The eight men, who "weighed in" at Coney Island, showed total avoirdupois of 1247 pounds. Allowing for stops, the twenty-mile trip was made in 60 minutes, and no particular effort at speed was attempted. The wheels being fitted with pneumatic rubber tires and ball-bearing axles, the operators of the pedals found their work surprisingly easy.

If the old contention that every minute saved in going to a fire is of incalculable value holds good, and no one doubts that it does, the time saving feature in the operation of this new fire fighting machine is alone enough to warrant its general use by fire departments. First of all there is no delay for hitching, the apparatus being ready in its house for starting instantly upon the sound of an alarm. Two, three or four men can propel it easily at double the rate of speed attained by a team of horses. A chemical apparatus has for its purpose the quenching of fires in their incipiency and its most important factors are readiness for service and speed in traveling to fires. The bicycle chemical is obviously a world beater as regards readiness and speed.

The new invention claims another advantage over the horse-drawn chemical in being cheaper to maintain. Its first cost will not be any more, and, perhaps, less, than the horse vehicle. Therefore, as to investment the cost of a team of



quipped with the ordinary bicycle means of foot propulsion. The accompanying illustration shows the construction of the device better than words can describe it. The machine shown in the cut was built for four riders, but there is nothing to prevent the addition of as many more seats and pedals as are desired. Four men, however, are more than enough to propel the machine with ease.

The frame is constructed of extra

good fire horses is saved. Furthermore, the expense of feeding and taking care of the horses is avoided by the use of the bicycle invention. The item of total salaries for a chemical company might also be reduced. If it is not desirable to have four men in the bicycle chemical company, and the apparatus is housed with a hook and ladder outfit, the number could be reduced by assigning one or two men of the hook and ladder company to ride

to fires on the bicycle chemical. Such an arrangement would have the double merit of reducing the load on the hook and ladder truck and getting a couple of its men to the fire in advance.

Mr. Dolfini will have his new invention at the Syracuse convention of the International Association of Fire Engineers, where its merits will be demonstrated through practical tests.

Kind Treatment to Fire Horses.

A circular recently sent out by Chief Croker, of the New York fire department, to all company commanders contained the following:

"In the future, when drivers and others have occasion to be around the horses, the practice of shouting and talking in a loud and boisterous manner must not be tolerated. They will speak to the animals in a kind and gentle manner, and in that way find that the horses will become more gentle and intelligent and quicker to obey. The whip, stable broom or fork must not be used to punish the horses. The drivers and other members of companies cannot pay too much attention to this important branch of the service. Attention is also called to the trimming of the horses' fetlocks and manes and the care of harness. The practice of washing the harness in hot water will be discontinued and water of a medium temperature used. The harness will then be thoroughly dried and a small quantity of harness oil or dressing applied. In all cases officers will see that the harness fits the horse properly and that the bit is in its proper place and not hanging down in the mouth. Stalls must also be kept neat and clean and in as healthful a condition as possible and properly bedded down."

Engines and Auxiliary Pipes.

Chief C. F. Wall, of the Toledo, Ohio, fire department, makes a suggestion to substitute stationary pumps and auxiliary pipe lines for steam fire engines. The chief says:

"The city of Toledo will have, as soon as the new houses are finished, fifteen hose carriages in service, and only eight steamers. So if the same line of procedure continues it will be necessary to have seven additional steamers, one for each house. These will cost $4,500 each, or $31,500.00; to man them will require three men for each engine (exclusive of horses and harness). One engineer $900.-00, one driver $800.00, one stoker $800.00, a total of $2,500.00 per year, or a grand total for the seven steamers of $17,500.00 per annum. These men simply take the place of high pressure water works. They are not required to help raise ladders, carry hose into a building, or do anything of that kind; they simply furnish pressure.

"My opinion is that this is not the scientific or economical plan by which pressure should be furnished. Pumps capable of giving service equal to the entire seven engines could be placed in the Court House power plant, or any other central point where a head of steam is always keptup, with auxiliary pipes and independent hydrants covering a central districts, and when an alarm is sounded, the engineer in charge simply opens the throttle and you have your high pressure throughout the entire district at once. This district could be made to comprise an area of at least one square mile. The pressure would be ready for the first hose carriages that arrive and the capacity equal to or greater than that of the seven steamers. You would not be obliged to wait for steamers, some of which must travel two or three miles through snow and blizzard. If a horse falls, wheel breaks, or any accident occurs they do not get there at all. This also will give an auxiliary water system and if the city water works should have a bursted pipe at the time of a fire, we would not be entirely without protection.

"This system works most satisfactorily in connection with fire boats, so it is fair to assume it would be a success with stationary pumps. It could also be placed in factory districts and the engines that we now have, together with the city water works, can take care of the residence portion of the city. The pipes can be laid for $2 per lineal foot with hydrants and pavements replaced. The cost of the pumps would not be one-third of that of the steam fire engines and only three men eight hours a day would be required, instead of twenty-one men for your engines. No matter where the auxiliary system is located the water could be supplied from the same source as that which supplies the steamers."

Would Promote Brave Firemen.

Fire Commissioner Scannell, of New York, has written a letter to President Knox, of the civil service commission, suggesting that as the present civil service law prevents promotions in the uniformed force of the department unless the name of the applicant is upon the eligible list, and as this can only be accomplished by competitive examination, a rule be adopted that promotions be allowed to be made by the commissioner, upon his certificate certifying to the fact that the applicant's name appears upon the roll of merit as having performed meritorious service at personal risk, and reciting all the facts connected therewith.

"It is a matter to which I have given close attention," says Mr. Scannell, "and in my opinion if such a proviso were incorporated in the civil service rules the efficiency, usefulness and discipline of the department would be greatly enhanced and the members of its uniformed forced offered an inducement for a display of personal valor the value of which cannot be overestimated."

CHARLES COOMBS,
SECOND ASSISTANT.

JOHN F. QUIGLEY,
CHIEF.

THOMAS F. RYAN,
FIRST ASSISTANT.

CHIEFS OF THE SYRACUSE FIRE DEPARTMENT.

—If brick pavements are to continue their popularity as the material for paving city streets and country roadways, the manufacturers themselves must see to it that no poor brick are sold to contractors for paving purposes, and they ought to insist that their brick are put down on good substantial foundations. Every poor piece of brick pavement, no matter where the fault lies, is an argument against vitrified brick as a paving material. If vitrified brick pavements are to continue their great popularity, the manufacturers must fight and not encourage shams and cheats, even to the point of refusing to fill orders for imperfect materials.—Clay Worker.

A Case of Collusion.

When the fire committee of the San Francisco board of supervisors opened bids recently for fire department supplies they discovered a very large and elegant colored "gent" in the woodpile. All the bids were found to be from 300 to 500 per cent. higher than the market prices. Fire Chief Sullivan, for a few days preceding the opening of the bids, had been making a quiet investigation of prevailing prices, and when bidders offered to sell the department mop handles at $9 a dozen the chief informed the committee that he could get the same article at $1 a dozen. The chief "called down" the prices of lead traps from $1.14 to 30 cents, of iron pokers from $2.50 to 75 cents a dozen, etc. Result: Bids rejected by committee.

Report of Chief Harris.

A. J. Harris, chief of the fire department of Tampa, Fla., has issued his report for the year ended May 31, 1899. It shows that the service of the department has been kept up to a high standard during the year, the total fire loss being $5,946.13. There were 54 alarms. The force consists of the chief, one secretary, one superintendent of fire alarm, four captains, two engineers, eight drivers, four laddermen and five hosemen. The total expenditures for the year were $16,446.77, of which $11,735.45 was for salaries. The chief recommends the placing of additional alarm boxes and hydrants and the purchase of 2,000 feet of hose.

National Firemen's Association.

The National Firemen's Association will meet in annual session at Milwaukee, Wis., August 17, 18 and 19. Presi- Woods and Secretary Staymates have sent out a circular letter for the purpose of interesting firemen in the work of the association and its approaching convention. Among other things the letter says:

"The good of your personal and official influence in furthering the imperiously needed work of national unity in the fire service is as evident to your sense of duty as to ourselves. The most direct objects of the National Association, already taught at our past conventions and by the faithful fire journals for two years are to provide a plane of common unity on which state associations can by contact interchange their useful knowledge, attain harmony and fraternity and thus concentrate by united action a power that will place the fire service abreast with other national interests instead of being in the rear."

Mayor Rose, of Milwaukee, T. G. Sullivan, secretary of the business league, and Chief Foley are directing arrangements for rendering the visit of the firemen full of profit, pleasure and sight-seeing. Ex-Governor Peck and other noted orators will address the convention. An extended program of topics and topical essays is being provided and will be rendered.

Firemen's Training School in Boston.

The drill school of the Boston fire department is a most interesting and valuable institution. It is the school in which candidates for active service in the Boston fire department are taught the business of fire fighting. Its graduates are assigned to the active companies, and this year 27 young men finished the course of instruction with success and were added to the paid force. Lieutenant Alfred J. Porter is the instructor.

The first lessons given the candidate consists of instructions in deportment, character, manners and discipline. They are commanded to obey orders of their superiors without question, no matter how discouraging the situation may be. These lessons over, they are made acquainted with every piece of apparatus, from the smallest to the largest, in the entire department. They are then broken in on ladder work and house duty.

About the third week of their tuition Lieu. Porter drills them on scaling ladders and saving life. Should a second alarm fire break out while the class is at work, the instructor takes them with him to the fire, and gives them a practical illustration of how to fight the flames.

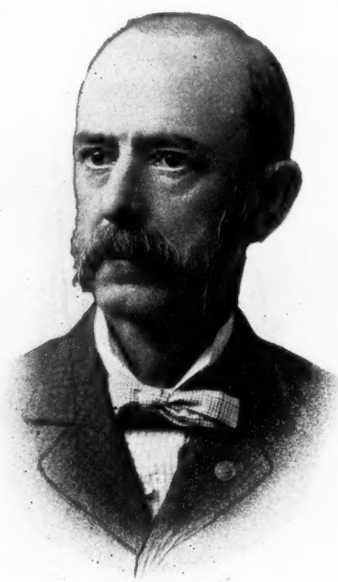
Lieut. Porter never asks a man to go where he fears to venture. His conduct in coaching embryo firemen to climb dizzy heights is not unlike that of a mother bird teaching her young to fly. When on the scaling ladder lesson Lieut. Porter only goes as far as the third story—50 feet high—the first time. Some men get dizzy at this height. To take a person down from the top of a burning building on a slender rope is no easy task, and when performed successfully before the eyes of hundreds of terror-stricken people the rescuer is hailed as a hero. Yet when Lieut. Porter has had his pupils with him for a few weeks they climb the sheer height of the tower of the fire headquarters, 168 feet in the air, and carry a companion down in less than a minute.

The scaling ladder, or Pompier ladder, work of the class was most interesting. These scaling ladders are ten feet in length, weigh from 20 to 45 pounds, and look not unlike an immense hook, a footing upon them being secured by a series of rounds passing through the handle. Almost any height can be reached by these ladders, and toward the end of the term the class becomes as skilful with them as trapeze artists.

The closing lessons of the term consist in experiments with the aerial ladder, Bangor ladder, water tower and gun and life line. The class raised the Banfor ladder in 38 seconds during their last lesson.

Less than five per cent. of those who pass the civil service examination fail in the drill school. Lieut. Porter scouts the idea that steeple climbers, sailors and riggers make the best firemen. He places his faith in an ordinary mechanic. This calling produces a class of workers, and that is what is needed in the make-up of a fireman. Lieut. Porter says any ordinary man could become accustomed to dizzy heights through a little training.

The firemen's school for instruction begins about March 15 every year, and is continued for 30 working days.



JACOB M. MERTENS. JAMES A. ALLIS, CLERK.

COMMISSIONERS OF THE SYRACUSE FIRE DEPARTMENT.

Fire Department Items.

—Edward F. Croker, who has been acting chief of the New York fire department since the retirement of Hugh Bonner, has been appointed to the position of chief by Fire Commissioner Scannell. The appointment was made without a civil service examination, and some reformers threaten to attack its legality.

—Mayor Driscoll, of New Haven, Conn., has appointed H. Sherman Holcomb and John J. Sullivan members of the Board of Fire Commissioners. Both appointees are well known business men.

—Chief Marjenhoff, of Charleston, S. C., one of the most popular firemen in the country, will attend the Syracuse convention of the International Association of Fire Engineers, and invite the association to meet in his city next year.

—The zero sign has been introduced in the fire alarm system of New York. The first box with the cipher in the number is 460, placed at Fifth avenue and Thirty-third street. Chief Croker says ten strokes are just as easy to count as nine.

DEPARTMENT OF INQUIRY.

The editor of CITY GOVERNMENT will undertake to furnish, through this department, replies to all inquiries pertaining to municipal affairs sent in by subscribers. The names of inquirers will not be published in any case.

Gas in Great Britain.

How many cities in Great Britain own and operate gas works and is the price of gas to private consumers in that country generally less than it is in the United States?

About 225 municipalities in Great Britain have municipal gas works, and this is about one-third of the total number of gas enterprises in the kingdom. Nearly all of the large cities have municipal plants, the notable exceptions being London, Liverpool, Dublin, West Ham, Craydon and Newcastle. Local authorities have considerable power of control over the private companies. An act of parliament limits the annual profits of gas companies to 10 per cent. on the paid-up capital, and a subsequent act lowers the maximum profit, with regard to additional capital, to 7 per cent. on ordinary shares and 6 per cent. on debentures. The law prevents companies from paying dividends on watered stock. The charges for gas supplied to private consumers are generally lower in Great Britain than in the United States.

Dust from Asphalt Pavements.

We have frequent complaints in our city on account of the dust that is blown from asphalt pavements into stores and shops. Can you advise us how such trouble is obviated in other cities?

Some time ago the merchants in the city of St. Paul, Minn., were complaining of dust from asphalt pavements being blown into their stores. City Engineer L. W. Rundlett gave the matter careful investigation and finally devised a system for cleaning asphalt streets which obviated the dust nuisance. Mr. Rundlett writes to us regarding the matter as follows:

"In reply to your letter relative to the dust which arises from asphalt pavement, I would say that the asphalt streets in St. Paul are cleaned on the block system, that is, a certain amount of territory is given to a man to keep clean, he being provided with the necessary appliances. This has been very satisfactory in the residence district. In the business districts, where the dirt is brought in from the outside streets and goods are displayed in the stores, in addition to this system we also have the streets sprinkled with a fine spray and at night they are washed with a stream taken from a fire hydrant, the hose for this purpose being mounted on casters so that it can be easily handled. This system gives good satisfaction, although personally I am opposed to sprinkling the streets in the day time if it can possibly be avoided. It makes the street more difficult to clean with the hand brooms and if there is the slightest depression in the gutter it will leave standing water, which is unsightly."

Hoboken, N. J. FREE PUBLIC LIBRARY READING ROOM

J. B. VISSCHER. JAMES M. LYNCH. CHARLES A. DENNISON.

COMMISSIONERS OF THE SYRACUSE FIRE DEPARTMENT.

Municipal Lodging Houses.

For a long time Mayor McGuire, of Syracuse, N. Y., has had a pet plan for the construction of a municipal lodging house. Until last winter he was unable to secure the co-operation of enough aldermen to even permit of an experiment in this line. About five months ago sufficient rooms were rented to provide fifty lodgings for the better class of nomads in search of work, and the plan worked so well through the balance of the winter and early spring that a majority of the aldermen were won over to the mayor's way of thinking, and the final steps for making this a permanent feature of this municipality have been taken. When Mayor McGuire was asked for an account of the scheme he said:

"I have leased for a period of six months a block at 113 Market street, which will be known hereafter as the Municipal Lodging House. The city is to pay $100 per month rent. The property consists of a store and three floors. The committee appointed for that purpose, with which I will co-operate, will proceed to fit up the hotel.

"It is my purpose to fit up the place similarly to the government lodging house at Washington, D. C. In addition to the care of houseless poor I intend to relieve the poor department of the temporary care of the insane. Instead of confining these unfortunates in the court house dungeon, I am going to have one or two rooms fitted up for them on the top floor in a secure but humane manner.

"By fall I hope to be able to convince the people of Syracuse that the municipal lodging house is a vast improvement over the present method of providing for the unfortunate persons who cannot obtain employment, and from the standpoint of economy, that our city will be the gainer.

"Shortly after the common council granted me authority to proceed with my plans for a municipal lodging house I set out to study the plans upon which such houses were conducted in other cities, naturally choosing those which had been successful. My plans have not been without opposition. So soon as my purpose became known the chamber of commerce committee opposed the plan and urged that the applicants for work be turned over to the local branch of the Salvation Army. I accepted the latter suggestion merely as a temporary expedient, because I knew that some months would elapse before the city lodging house would be ready. The Salvation Army is doing a good work in its own peculiar way, but I do not believe that it is the will of the people to see the man-

agement of a municipal lodging house in the hands of that organization.

"The Chamber of Commerce committee claimed that municipal lodging houses had been failures everywhere and had been turned over to the Salvation Army. This claim is not true, as I will presently show you from the reports of other cities.

"Naturally all sorts of ridiculous charges have been made, namely that I want to fill the town permanently with tramps and criminals; that the lodging house would attract vagrants to our city. But the reports from other places disprove these assertions. Furthermore, it is not the purpose to care for the men for a longer period than two weeks.

"The city of Washington, D. C., successfully conducts such a lodging house, at the expense of the federal government. The lodging house in Washington has been in operation about ten years. It receives regular appropriations from Congress. Its capacity is limited to fifty inmates per night, whose wants are looked after by seven employees. All classes and conditions of men are received, but no women are allowed as inmates. Each applicant for admission is registered, asked where he worked last, and how long he has been out of work. After registration he receives a ticket, which entitles him to three days' subsistence. Two meals per day are provided, which consist of bread, coffee, a stew made of bread, potatoes, beef and rice or barley. Meals are served at 7 a. m. and 5 p. m. In consideration of this subsistence, the inmate saws and splits twenty-one sticks of wood, which entitles him to a supper, a bath, a bed and breakfast; while the same work upon fourteen sticks of wood entitles him to a bath, a bed and breakfast. Besides the equipment of a bathroom, the institution has a room for the disinfection of clothing. A small library is provided for the use of those who care to read during the evening.

"During the year 1895, 5,733 inmates were cared for, at an average cost of 23.42 cents per day; in 1896, 5,652, at an average cost of 22.08 cents per day; in 1897, 4,641, at an average cost of 38.58 cents per day; and in 1898, 4,241, at an average cost of 39.89 cents per day. During the four years the total number cared for was 20,267; total number of lodgings furnished, 49,947; total number of meals, 95,745; total number who were provided with outside work, 647.

"You will observe from these statistics that our opponents are wrong in stating that lodging houses increase the number of tramps.

"In Boston the institution is known as the wayfarers' lodge, and is in charge of the poor board. Mayor Quincy believes in it heartily. The conditions upon which the assistance is given are practically the same as in Washington. It has been carried on for about six years and in 1898 accommodated 22,000 lodgers and furnished to them about 55,000 meals. The men are registered and information is obtained as to their desire for work. All comers are received whose poverty is such as to prevent them from paying for the necessities, and they are subject to labor in the various city departments. The principal employment, however, is in cutting wood, which is sold in the fall and winter. The lodging house costs the city of Boston about $8,000 per year, and, it is estimated, saves the city indirectly at least $20,000 per year, to say nothing of the general good accomplished. Similar lodging houses are conducted, with most gratifying results, in Toledo, Baltimore, Louisville and other American cities. Many European cities have had lodging houses of this type for years before they were introduced in this country. If rightly managed we cannot fail to reap lasting benefits as a city from such an institution and at the same time render important aid in the hour of need to our brother-man."

Largest Police Force in America.

The annual report of Chief of Police Devery, of New York, has appeared and it shows that his police force is the largest on this continent. In fact, it is probably the largest police department under one head in the world. However, the chief is not satisfied, and makes an appeal for 1,000 additional patrolmen. His appeal is not by any means without reason, for the immense amount of territory and the great population of the metropolis warrant the services of more than one patrolman for each 556 inhabitants, which is the present showing. The chief says:

"No appointments were made to the police force during the year, for the reason that by the provisions of the charter the maximum number of patrolmen was fixed at 6,382. There is a pressing necessity for an increase in the number of patrolmen, the necessity for properly patrolling the borough of Queens, together with the increase in the population of all borougns require that additional men should be provided; the patrol posts as divided in many precincts are so large in territory as to be almost impossible to expect the proper patrolling of it by an officer; this will apply to many posts in the thickly settled parts of the boroughs of Manhattan and Brooklyn, as well as in the other boroughs."

About Bicycle Policeman.

Chief of Police Devery, of New York, is a warm supporter of the policeman on wheels. In his annual report, he says:

"I call your attention to the work done by the bicycle squad in the boroughs of Manhattan and the Bronx. Since I have had charge of the force this squad has been the object of a great deal of my time and attention. I have realized how important it is to the traveling public in the way of protecting life and property, compelling observance of the laws and ordinances and other general police duty.

"In the Borough of Brooklyn, while there were some few members of the force scattered here and there throughout the precincts doing bicycle duty, there was prior to last year no regularly organized bicycle squad. On september 15, 1898, there was organized for that borough a squad of 25 men under the command of a roundsman. The results of the estabilshment of this squad in Brooklyn have been most excellent. The important bicycle thoroughfares have been adequately protected, and the ordinance violations by reckless bicycle riders and drivers have been reduced to a minimum. Care will be taken to extend as far as possible during the coming year the good results already obtained from this service."

A Mayor Murdered.

Mayor James Balbirnie, of Muskegon, Mich., was assassinated on June 29 by a disappointed office seeker named Tayer. The mayor was shot while standing in the doorway of his store at noon. The murderer committed suicide immediately after shooting the mayor. Tayer had held the office of city poor director for some years and was ousted by Mayor Balbirnie last spring. He afterward made application for the position of sexton, and the mayor's refusal to appoint him prompted the murder.

Park Improvements at Pittsburg.

Highland Park, Pittsburg, Pa., is to be further improved by the erection of a splendid granite and bronze gateway at the Stanton avenue entrance. The contract for the construction of the gateway has been awarded to the Roman Bronze Works of New York at $19,950. Pittsburg councils have also recently ordered 600 new lawn settees for parks.

Night Collection of Garbage.

In Syracuse the collection and disposal of the garbage is placed under the supervision of the health department. Dr. O. A. Thomas, who has given the matter much thoughtful consideration, recently recommended the collection of all garbage at night, giving the following reasons for it.

First—The wagons of this department would not be on the streets during the day.

Second—The streets would not be littered during the day, as any ashes dropped at night would be taken care of by the sweeper in the morning.

Third—It would do away with ashes and filth being blown onto people when passing a loading wagon.

Fourth—The unsightly barrels and boxes could be placed at the curb between 6 and 8 in the evening and many would be removed at once. They would all be removed before 8 o'clock the next morning, doing away with whole streets lined with barrels and boxes for twenty-four to thirty-six hours, as is now the case.

Fifth—It would do away to a large extent with the nuisance of ragpickers hauling over the contents of the boxes and barrels, scattering it upon the lawns and streets.

Sixth—It is much easier for the men and horses to work at night than during the heat of the day.

Seventh—We should lead other cities in municipal work, and not follow.

Eighth—Any objections to collecting ashes and rubbish at night, in my opinion, can be overcome.

These are only a few of the many good points why ashes and rubbish should be gathered at night.

—The Minnesota State Firemen's Association held its annual convention at Austin last month with nearly 300 delegates in attendance. The principal topics discussed were: "Should the right to elect officers to the volunteer department be conceded to firemen;" "Is it conducive to the efficiency of the volunteer departments to offer prizes for the first water on the fire;" "Should penalties be imposed for non-attendance at meetings and fires." The following officers were elected: President, W. H. Norton, Winona; first vice president, F. D. Leffer, Fergus Falls; second vice president, Thomas Morris, Crookston; secretary, R. O. Strong, St. Paul; treasurer, Frank E. Joy, Stillwater; statistician, E. F. Kelly, Fairbault.

WATER DEPARTMENTS.

Inadequate Water Supply.

Officials of Owosso, Mich., are confronted with the necessity of furnishing an additional water supply, the wells now in use being inadequate to meet a heavily increased demand. The water in the reservoir at the pumping station recently fell to two inches in depth, and in case of a big fire there would be serious results from the lack of water. Mayor Hume, the council and the board of public works are looking about for a new source of supply.

Complaint Against Water Works.

The Grand Rapids, Mich., "Democrat" says there is something the matter with the management of the water works in that city. It points to the fact that there are three times as many services now as there were in 1891, with a corresponding increase in consumption of water, while the annual revenue from water rates has only increased from $50,000 to $90,000. The "Democrat" says the schedule of rates is inequitable, the larger consumers being supplied at less than cost while the small house holders are given an almost pronibitive rate.

Superior Water Controversy Settled.

Mayor H. W. Dietrich, of Superior, Wis., in a letter to "City Government" says:

"The conference recently held between the officials of this city and the Superior Water, Light and Power Company was instituted for the purpose of settling the differences existing between the city and the water company. For two years last past the city has not been paying the hydrant rentals due the company on the theory that the water furnished was not good and wholesome as provided in their charter, and the pressure in the hydrants was not sufficient. The company instituted an action to collect these hydrant rentals, and the city was about to institute an action to forfeit the charter and hydrant contract with the water company. A settlement was effected on the following basis: The company to install a new English filtration system at a cost of about $75,000, which would guarantee an abundant supply of good and wholesome water; strike 75 hydrants off the pay roll at $45 a hydrant, and make a general reduction of 8 per cent. on all commercial rates to consumers. And the company further accepts for $56,000 worth of hydrant rentals due them a cancellation of $29,000 of taxes due the city and a cash payment of $15,000. All alterations in the water plant to be made by December 1."

To Investigate Water Plant.

Mayor John M. Redmond, of Cedar Rapids, Ia., in his annual message to the council, suggests immediate investigation of the local water question with a view to acquiring a municipal plant or renewing the present company's franchise, which expires in February, 1900, on fair and reasonable terms. He says:

"A commission of ability, and in which the people will confide, should be appointed by the council early, charged with the duty of ascertaining the actual cost at this day of the construction of such a system as the water company in this city now operates; to ascertain whether there are better or cheaper systems of supplying water for the city; the expense of maintaining and operating the different systems; whether and how a better supply of water for this city can be obtained; the water rentals for hydrants, flush tanks and private consumers under different systems and in different cities, and report in detail and in full their information and findings to the council at a date named not later than the first day of January, 1900."

Duluth Water and Light Plant.

C. F. Leland, president of the water and light commission of Duluth, Minn., says that the operation of the water and gas plant acquired by the city nearly a year ago has proven entirely successful.

"The plant is more than paying expenses," says Mr. Leland, "and at the end of the first year's operation under the commission a good sized surplus will be shown, amounting probably to about $5,000. I am not taking into account any allowance for depreciation in the value of the plant because the commission is making repairs wherever required and if repairs are kept up as they should be the value of the plant will not deteriorate."

Report of Danville Water Works.

The Danville, Va., water works report for the last year has been issued. It show receipts for water, $13,270.73; receipts for tapping, $295.00; total receipts, $13,565.73. The total disbursements for the year amounted to $10,388.29, of which $2,545.95 was for new construction, leaving $7,842.34 to represent the year's operating expense. The total pumping for the year amounted to 205,127,385, a daily average of 561,992 gallons, and a daily per capita consumption of 29.57 gallons. City Engineer Ballou, in the report, says:

> It has been the sentiment of city councils of past years that the water and gas departments should not be made sources of revenue. In conformity to this principle, the price of gas has been reduced from time to time, but the rates on water could not be reduced in the same way from the fact that before the use of water meters, the waste of water increased from year to year until at least two-thirds of the water furnished to the city was allowed to run to waste, thus constantly increasing the expense of furnishing a water supply without corresponding increase in the revenues. Since using meters and stopping waste, you could now adopt the same rule and reduce the rates on water, so as to bring the recepts down to the cost of operating the department. The present price is from 50 to 66 per cent. less than before using meters, and as far as I know is satisfactory to the patrons generally. But the rates might still further be reduced 33 1-3 per cent. and still be able to pay ordinary running expenses.

To Abolish Water Rates.

An ordinance has been introduced in the Baltimore, Md., council providing for the abolition of ordinary water rentals on and after January 1, 1900. In brief the ordinance says:

The water registrar's office is to be abolished after January 1, 1900, and thereafter no charge to be made for the use of water, with such exceptions as are mentioned later on. The expenses of the water department are to be added to the regular annual tax levy.

Free water is provided for all domestic and culinary purposes, for the watering of streets, pavements and lawns, for public fountains and for manufacturing plants not excepted in a later clause of the measure. All water rents in arrears on January 1, 1900, shall be turned over to the city collector for collection, with full power to proceed against the delinquents.

The water board is to make an annual report of the streets or parts of streets not supplied with water and indicate which are most in need of water service. The board is invested with full authority to fix rates for the use of water "in the manufacture of ice and all liquid commodities, for condensing or any other machinery that wastes water by actual flow, for water motors, private fountains, elevators, private waterfalls, private ponds and the like for ornament or pleasure. All revenues derived from this source and from fines and penalties to be used only in the laying of mains where most needed.

It is further stipulated that no provision of the ordinance shall exempt from payment of rentals such manufacturing plants as are exempted by law from state or city taxes.

The whole object of the ordinance is to abolish water rents and place the cost of maintenance of the system in the tax levy, only reserving to the city the right to assess those concerns which escape other forms of taxes, and those that from the very nature of their business require the use of a comfortable quantity of water.

Special Valve and Nozzle for Filling Sprinkling Carts.

Mr. William R. Hill, superintendent of the water department of Syracuse, N. Y., has recently perfected a fire hydrant fitted with a special valve and nozzle which reduces the wear and tear on the hydrant to the minimum, at the same time permitting its use for sprinkling and flushing purposes. In speaking upon this subject to a representative of "City Government," he said:

"Too much care cannot be given to the construction of a water distributing system, in selecting the most perfect materials so as to insure the greatest durability. One of the weak points is the fire hydrant that is used for other than fire purposes.

"In this connection it will not be out of place to state that no one is allowed to carry or use a wrench on any of our hydrants in Syracuse except a member of the water or fire departments, because in too many cases disaster has followed in the wake of the indiscriminate use of the fire hydrant by every Tom, Dick and Harry who wanted water on the street. Furthermore, fire hydrants should not be

used as fixtures to fill sprinkling carts with water, unless they are provided with a special valve and nozzle for that purpose. Such a valve and nozzle can be made in the dome or cap of the hydrant. During the season when sprinkling is done the drip is closed and the main valve in the hydrant is slightly opened so that there is a constant supply of water in the barrel of the hydrant. The men who sprinkle cannot interfere with the main valve or nozzles, as their wrench will not fit them. To use these hydrants for fire purposes the firemen first close the main valve with three turns of the valve rod. They cannot make a mistake and take off the upper nozzle, as that requires a smaller wrench. These special hydrants should be placed at points convenient for the purpose of sprinkling. In the city of Syracuse there are 200 that have been in use two years, and have been very satisfactory, both to the water and fire departments.

"I did not have the hydrant patented, so that it is open to the free use of all who wish it."

To Prevent Bursting of Frozen Pipes.

Officials of water supply systems and owners of buildings will be interested in a new pneumatic system for preventing the bursting of water pipes by freezing in the winter season. This is the invention of a young scientist, Charles E. Munroe, professor of chemistry in Columbian University. The bursting of water pipes is well known to those familiar with hydraulics to be due to the irresistible expansion which water undergoes when changing from the liquid state to ice, and that the amount of expansion is approximately 10 per cent.

The invention of Professor Munroe is based upon scientific principles, and is yet absolutely simple and positive in its action. His system depends solely upon the elastic cushioning of the pipes at intervals with air by menas of perfected air domes, with inclined planes or slopes, opposite the mouth of the storage dome. This system uses nothing but metals in its fittings, which are inserted permanently in the pipe at intervals, and are attached by ordinary screw couplings. It is claimed that they will allow of the pipes being frozen any number of times without bursting, and are always ready for duty. Should the pipes to which these fittings are attached freeze, they will be immediately ready for service upon thawing out, doing away not only with all expensive repairs but also with accompanying damage done by escaping water. The domes used are of two different kinds, to adapt them to the different positions of the pipes to which they are attached, namely, horizontal and vertical. The dimensions of these domes have been carefully determined, in combination with the percentage of ice expansion and a ten-foot length of exposed pipe. The pipes are not injured between the air domes, because of the viscous behavior of ice, which allows it to slide along the bore of the pipe until it strikes the double slopes or inclined planes, when it is slid up into the storage room of the dome, simply compressing the air, instead of bursting the pipe. It is because of this property of ice to flow when subjected to pressure that the lateral or transverse tendency to expand becomes resolved entirely into expansion of longitudinal value. Attached to each installation is an inspirator, which keeps up the supply of air in the domes.

More Trouble with Electrolysis.

The city of Auburn is having its share of trouble with electrolysis. The greatest sufferers are the property owners who use city water, for they are obliged to pay for the replacing of the service pipes which are destroyed by the uncontrolled electricity of the electric street railway. The railway company refuses to replace property which it has destroyed and the owners of the destroyed property have so little money with which to fight for their rights that they deem discretion the better part of valor and do nothing.

While the city of Auburn cannot appeal to the courts for redress in their behalf, it has been carrying on a litigation for the sake of protecting its own property. A representative of "City Government" called upon Mr. J. Lewis Grant for a statement of the facts in the case and he said:

"This is a subject which has engaged the attention of the water department for the last four years, and will continue to do so as long as the Auburn City Railway Company permits the electric current employed in its system to return to its power house by way of the water mains of the city and the service pipes of our citizens.

"It may be characterized as a marked case of a beneficiary of the city adding insult to injury. Granted a franchise that is a valuable monopoly, without a dollar's consideration, it ignores the rights of our citizens and our city. After fruitless efforts of the board to come to some understanding with the company through its president by correspondence, every letter of ours except the first remaining unanswered, an appeal to the state board of railroad commissioners was made on June 8, 1897, setting forth the facts in the case and asking that a competent electrical engineer be sent here to examine into existing conditions in this city.

"After many delays brought about by the railroad company the electrical expert employed by the state board made his report and that commission made its recommendation and demand upon the railway company.

"Two years and more have passed and the recommendation of the state board has not yet been complied with. It is difficult to tell how much damage has been done to the water system—though it will reach thousands of dollars. It looks, at present, as though a settlement of the question, in so far as it affects the compliance with the recommendation of the state board, will be reached sometime during this month."

Use of Sulphate of Alumina Endorsed.

The third annual report of the Kansas City, Mo., water department is of especial interest, because it shows that the service has been greatly improved since the plant became the property of the city, while the financial results are most gratifying. The revenue derived from the water works for the fiscal year, which ended April 17, amounted to $410,570.29. The operating expenses were $119,148.89; the expenses of the office of the asessor and collector of water rates were $11,136.89; the interest on the bonded debt amounted to $138,195.00, and the amount spent for extensions and betterments was $86,012.22. The cash balance on hand at the beginning of the year was $121,693.12, and at the close of the year it had increased to $177,710.41.

Since the city took possession of the plant the wier system for purifying the water has been introduced at one of the stations, and it has worked so satisfactorily that it is to be put in use at the other station. In the report at hand, Chief Engineer Kiersted says:

The use of the wiers during the spring fulfilled all reasonable expectations of their usefulness. The delivery of muddy water from the Quindaro basins for a short time during the early spring, was due to a failure to use a sufficient amount of coagulate. It is a well-known fact that the Misouri river water cannot be successfully clarified, either by sedimentation or filtration, without the use of coagulates. Thus far the sulphate of alumina is found to be the most available and economical coagulate. Had it been used in sufficient amount it is believed that the siege of muddy water in the spring could have been averted. The carbonates in the Missouri river water are as a rule, much in excess of that required for proper coagulation. At all times the clarified water delivered to the city has possesed a sufficient amount of carbonates to decompose more alum than was originally applied to the river water, showing clearly that no undecomposed alum remains in the water supply. This test has been confirmed by frequent and delicate tests for undecomposed alum.

Superintendent Longwell says that he is responsible for the muddy condition of the water served in the early spring, as he would not permit the use of sulphate of alumina to the extent necessary to coagulate and clarify the water until he had the endorsement of the health department, certified to by the city chemist. On June 21, 1899, Dr. G. O. Coffin, of the health department endorsed the use of sulphate of alumina, after receiving the following letter from the city chemist:

In compliance with your request, I have the honor to report the analysis of city water, taken form hydrants, as follows:

	Grains per U. S. Gal.
Suspended solids, chiefly clay and sand	5.4375
Silica	.5800
Alumina	.0021
Calcium Carbonate	3.3210
Calcium Sulphate	1.2665
Magnesium Carbonate	2.5789
Sodium Chloride	1.4900
Carbonic Acid, combined	4.1950
Carbonic Acid, free	3.1970
Ammonia, free (Per Litre) miligram	.0040
Ammonia, Albumenoid, (per Litre)	0.270
Iron	Traces

In my opinion, the water is of excellent quality. By way of explanation, I may state that water containing 00 to .01 Mg. per Litre, as stated by Prof. Wanklyn, is, so far as organic nitrogen is concerned, of excellent purity. As compared with the water supply of other large cities, I am inclined to believe this superior to almost any of them.

Extensive repairs and alterations to the settling basins were made during the year, 61,542 feet of new mains were laid, 154 new hydrants, 105 new valves and 540 new meters were set.

The Detroit Water Board Act.

The board of water commissioners of Detroit, Mich., passed out of existence by the operation of a new law that went into effect on July 1, and the water works became a part of the department of public works. President D. W. H. Moreland, of the board of public works, sends us the following synopsis of tne new law:

Section one of the bill provides that on July 1, 1899, all the authority, rights and powers of the water board, with all property, shall be vested in the city of Detroit, and that the operation, extension and improvement of the water system

shall be under the direction and supervision of the city, but no lands, engines, pipes, or new machinery shall be purchased or contracted for, or buildings erected, except by direction of the common council, on recommendation of the board of works, in the same manner as board contracts are now confirmed by the council.

* * * *

The city is to have power to condemn private lands for the purpose of laying pipes or mains, as it now has for highways, on recommendation of the board of public works, and a report in writing from the city engineer. Any right so to lay pipes, acquired by agreement, must be confirmed by a two-thirds vote of the common council. The council is to have the power to direct the purchase of necessary land and erect buildings on it, and to direct the purchase of new engines and machinery, but only when the money for any such purpose has been raised, appropriated or is on hand. It is also to have the power to pass ordinances to carry out the provisions of the act, and to regulate the distribution, use and consumption of water.

* * * *

The city is to assume all lawful indebtedness of the water board and the board's sinking fund is to be continued. All lawful contracts made by the board, all claims by or against the board and all suits are to be assumed by the city. The council may issue new bonds to meet old bonds.

* * * *

Every year the city is to cause to be levied $75,000, as at present, and this tax, when collected, is to be be credited to the water works sinking fund.

* * * *

The board of public works must establish a water department, and shall have power to appoint a superintendent, engineer, clerks and other employees, the common council to fix their compensation. The superintendent shall hold office for three years, but may be removed for cause by a two-thirds vote of all members of the common council.

* * * *

The board of public works shall divide and classify the work of the water department, and keep accurate and separate accounts of the cost of each branch, showing amounts for original construction and repairs. A weekly statement of work done in the several branches must be sent to the council, with the weekly pay roll.

* * * *

Accounts of the expense of laying pipes must be kept, and the proportion for the cost of laying 6-inch pipes must be assessed to each lot benefited. Lots already supplied with water are not liable for pipes to be laid in future, but in case of pipes hereafter laid, no lot shall be supplied with water until the proportion of the cost of laying pipe shall be paid with interest. No water shall be supplied outside the city, except with the consent of two-thirds of the common council.

* * * *

The revenues of the water department are to be divided into the construction, maintenance and sinking funds. Estimates of the cost of improving and enlarging the pumping works and plant, and of operation and maintenance shall be furnished the city council before February 15, of each year. These have to be approved by the council and board of estimates. The board for fixing water rates has to send to the council before May 1 in each year an estimate of the proportion of the total maintenance estimate that they deem just for purely domestic purposes. This is to be levied on the whole city, without being submitted to the board of estimates or a popular vote. The balance of the maintenance estimate, which covers water furnished breweries, laundries, etc., is to be paid by the owner or occupant of the property where the water is used. The water rates are to be collected as at present, but by the board of public works, until July 1, 1900. The board for fixing rates is to consist of the water department superintendent, the mayor, president of the board of public works, the city controller and the city treasurer.

* * * *

Section 11 provides that the city controller shall take over the water board property July 1. By section 12, it is provided that the revenues coming to the city from the house of correction shall be credited to the water works sinking fund, unless needed to buy land, engines or new machinery.

* * * *

All bonds provided for by the act are to be exempt from the charter provision limiting Detroit's bonded indebtedness.

Philadelphia's Water Problem.

Under the leadership of Mayor Ashbridge, Philadelphia is about to grapple with a pressing municipal problem—the purification of its water supply. The Schuylkill river water, which is supplied to the greater portion of the city, seems in the beginning to have given general satisfaction; but with the industrial development of the Schuylkill valley, its quality has steadily deteriorated.

At intervals for nearly half a century the question of a new source of water supply has been under consideration by the city authorities. In 1864, the chief engineer of the water department, after an examination of all streams within a radius of forty miles, recommended a gravity supply from a dam to be constructed in the valley of the Perkiomen creek, a tributary of the Schuylkill, about twenty-five miles northwest of the city. Eleven years later, a commission of experts, appointed by the mayor to consider the whole subject of the present and future water supply, examined a number of plans and recommended on the score of economy the foregoing as the most practicable. No steps were taken, however, to carry out the project.

In 1882 another board of experts was appointed which found it impossible to reach definite conclusions without extensive surveys and therefore recommended an investigation to supply the necessary data. In pursuance of this recommendation, a systematic survey was instituted under the direction of Mr. Rudolph Hering, and continued during 1883, 1884 and 1885. Mr. Hering, in his final report, advised the construction of an impounding reservoir near Point Pleasant, at the mouth of the Tohickin creek, which flows into the Delaware a few miles above Trenton, N. J. This reservoir was to be reinforced when the flow of the creek should prove insufficient, by pumpage from the river below. The water was to be brought to the city by an aqueduct thirty miles long. No steps, however, were ever taken to carry out this plan.

In the meantime the practical success of artificial filtration together with the advance in bacteriology, put the problem in a new light. While it was taken for granted in 1886 that pure water could be obtained only from mountain streams, it has since been demonstrated that the grossly polluted water may, by passage through sandbeds, be rendered as pure as a crystal spring. Accordingly plans for bringing water from distant sources in a measure have dropped out of sight; recent efforts being directed mainly toward the purification of the present supply. The magnitude of the problem is greatly augmented by the extravagant quantity of water which the city consumes. The daily pumpage is about 220 gallons per capita, as compared with 145 in Chicago, 100 in New York, Boston and Baltimore, 80 in St. Louis and still less in European cities. It has been clearly demonstrated by investigations conducted by the water bureau that more than half of the water passes directly from the hydrants to the sewers without serving any useful purpose. In a district including 1,064 properties, lying just southwest of Broad and Chestnut streets, the daily waste a few years ago was found to be 157 gallons per capita, while the amount actually used was only 95. A similar investigation in an uptown district containing 142 small dwelling houses showed a daily waste of 192 gallons per capita out of a total of 222 gallons.

In New York, Boston and the leading cities of Europe, the consumption of water is kept within bounds by the use of meters, as in case of the gas supply. People who will never take the trouble to avoid waste while the city bears the burden, see the matter in a different light when their water bills are large or small according to the amount consumed. For many years the chiefs of the water bureau have persistently urged the adoption of the meter system, but the proposition has never met with favor in councils.

Excessive waste aggravates the water problem in various ways. In the first place, as the pumping stations must be kept continually in operation to supply the demand and it is impossible to discontinue pumpage while the water is unusually bad in consequence of storms in the Schuylkill valley. At times the city is supplied with water of an extremely offensive character. Further, the water is drawn off from the reservoirs so rapidly as to leave insufficient time for subsidence; which, though much less effective than filtration, would remove a large part of the impurities.

The point of special importance, however, is the increased cost of constructing filter plants. According to the estimates of the water bureau, substantially confirmed by eminent engineers, a plant capable of filtering the quantity of water actually used could be constructed for about $3,000,000; whereas a plant of sufficient capacity to purify the additional amount wasted would cost $7,000,000 or $8,000,000.

The question of filtration has been under consideration for several years, but no action was taken until December, 1896, when councils, in authorizing a loan for various public improvements, included about $3,000,000 for the purification of the water supply. Owing to repeated delays this loan has only recently become available. The delay at first due to legal complications was prolonged by the opposition of a faction in councils acting in the interest of private corporations which were seeking to obtain control of the city's water supply.

As an outcome of the agitation for pure water, a number of bills authorizing the mayor to enter into contracts

with private companies, usually on terms extremely unfavorable to the city, were introduced during 1895, 1896 and 1897. Among these, the proposition of the Schuylkill Valley Water Company, which public spirited citizens regarded as one of the most objectionable of the lot, soon began to be a favorite with the city "fathers." In July, 1897, it was favorably reported by the water committee; and in the following March, in spite of the opposition of the mayor, the Municipal League and kindred organizations, together with all the responsible newspapers of the city, it passed select council by a large majority and was making fair progress in common council. Meanwhile it had become an open secret that the company was using lavish sums of money to facilitate the pass ge of its bill; but no definite information reached the public until March 10. At the session of common council of that date, Mr. Walter N. Stevenson, member from the thirty-second ward, rose in his place and announced that he had been offered $5,000 to vote for the Schuylkill valley water bill. This exposure led to the indefinite postponement of the scheme.

The disappe rance of the Schuylkill valley water bill seemed to clear the field for the loan bill, which, within a few weeks, passed both branches of councils and was signed by the mayor. Just as councils had begun to appropriate the money, another obstruction appeared. A well known lawyer, acting as counsel for two obscure citizens, applied for a bill in equity to prevent the negotiation of the loan. These proceedings, as it afterward appeared, were instituted by the local leader of one of the factions of the Republican party to prevent the expenditure of money during the administration of Mayor Warwick. Meanwhile, anticipating a decision favorable to the loan, the public spirited members of councils, supported by numerous organizations, made earnest and persistent efforts to secure an appropriation of $3,200,000 for filtration; but to no avail, many members perferring to await recommendations from the newly elected mayor. Soon after his inauguration, Mr. Ashbridge asked councils to authorize the appointment of a board of experts to formulate a definite plan for the improvement of the water supply. Such a board has been appointed, consisting of Messrs. Rudolph Hering, Joseph M. Wilson and Samuel M. Gray; and a report is expected in the early fall. Although reports of boards of experts have in the past been uniformly without result, there is a general confidence that in this case decisive steps are likely to be taken.—W. J. Branson.

Water Works Notes.

—The water works trustees of Springfield, Ohio, will borrow $10,000 for the extension of mains this summer.

—The franchise of the Independence, Mo., water company has been extended twenty years, the company agreeing to extend the mains about seven miles and give the city eighty fire hydrants at the same rental now paid for fifty, viz. $4,000 a year.

—During the last fiscal year 8.39 miles of mains were added to the Grand Rapids, Mich., water system, making the total 135.17 miles, with 1,272 fire hydrants. There was expended on construction $35,580.69, making the total cost of the works to date $1,385,748.95. The daily average consumption was 14,730,860 gallons.

—The new municipal water works at Mobile, Ala., will be ready for operation in November. It is expected that the sewerage system will be completed about the same time.

—The council of Phoenixville, Pa., has approved the plans for improving the borough water works, the amount to be spent being about $30,000. Among the improvements will be a storage basin of 6,000,000 gallons capacity, adjoining the present reservoir.

—Tour of the filter beds of the new natural filtration plant at Albany, N. Y., have been completed and the city is now being supplied with water from them. The Albany plant has cost a great deal of money and its operation will be watched with interest.

—The board of water commissioners at Middletown, N. Y., have aw rded the contract for a 3,000,000 gallon filter plant to the Continental Filter Company. This will be a model plant, as it will comprise a 1,000,000 gallon pressure plant of the Continental system, also a 2,000,000 gallon gravity plant, both contained in the same building.

—L. N. Case, formerly of Detroit and now manager of the water and light plant recently acquired by the city of Duluth, has been paid a neat compliment by C. F. Leland, president of the Duluth commission. Mr. Leland, in a public statement, said: "We were particularly fortunate in securing the services of our manager, Mr. Case. He has been found to be a hard working, careful and practical man and through his efforts the business has steadily increased, while the most rigid economeis are practiced in every branch of the work. Every cent expended is conscientiously accounted for and the department is conducted as well as it could be done by a private corporation."

Convention of Park Officials.

At the annual convention of the American Park and Outdoor Art Association, held at Detroit during the last week of June, there was a strong sentiment against the promiscuous and wholly injudicious painting of signs on fences, barns and rocks, and where no such surfaces are available, the erection of huge sign boards without regard to prospects or aspects that may thus be obliterated. The following resolution was unanimously adopted:

Resolved, That a standing committee of five persons be created to consider the best way of checking the abuses of public advertising; to recommend to the members of this association such national, state and local legislation as may correct this abuse; and to prepare and distribute, from time to time, printed matter to influence the public opinion in this direction.

The committee appointed by President Loring is comprised of Dr. P. M. Woodworth, Chicago, F. W. Kelsey, Orange, N. J., Charles W. Garfield, Grand Rapids, Mich., J. C. E. Hanford, Detroit, and F. L. Olmstead, Jr., Boston.

Another important resolution adopted at the convention follows:

Resolved, That a committee of three persons be appointed by the president to take into consideration the matter of offering prizes, in our different cities, for the improvement of grounds about manufactories and homes—both front and back lots—and especially about the homes of artisans; to formulate rules governing the distribution of prizes, and to offer suggestions for planting.

The committee appointed under this resolution consists of Prof. W. J. Beal, of the Agricultural College of Michigan, E. L. Shey, Dayton, O., and Dr. Wm. W. Tolwell, of Minneapolis.

Officers of the association for the ensuing year were elected as follows: President, Charles M. Loring, Minneapolis; vice presidents, Thomas H. McBride, Iowa City; Louis Wolverton, Grimsby, Ont.; John C. Olmstead, Brookline, Mass.; E. J. Parker, Quincy, Ill.; Lewis Johnson, New Orleans; M. L. Moore, Toledo; secretary, Warren H. Manning, Boston, Mass.; treasurer, Edwin B. Haskell, Auburndale, Mass. Auditing committee—W. W. Folwell, Minneapolis; John C. Olmstead, Brookline, Mass.; Lewis Johnson, New Orleans. Committee on resolutions—Warren H. Manning, Boston; Lewis Johnson, New Orleans; Christian Wahl, Milwaukee. Publication committee—O. C. Simons, Chicago; John C. Olmstead, Brookline; J. A. Ridgeway, Minneapolis, and Warren H. Manning, Boston. Finance committee—C. W. Garfield, Grand Rapids; J. D. Robinson, Toledo; William Scott, Buffalo, and J. H. Patterson, Dayton. Next year's convention will be held at Chicago.

Suggestions to Health Officers.

At this season of the year the health officers of the various cities will do well if they get the local press to give publicity to a few sensible suggestions as to what to do to avoid or to cure bad effects of the heat. Dr. Tenney, health officer of Cincinnati, has made public some directions upon this subject, of which we give a summary.

In general, avoid unnecessary exertion and fatigue; take the full amount of sleep that you require and don't allow yourself to become excited about anything. Perspiration should never be checked, but rather promoted, for its free flow prevents the body from becoming overheated. Drink frequently of cool, not cold, water, to induce perspiration. All iced and alcoholic drinks should be avoided. Excessive use of them sometimes causes speedy death. Wear thin and light colored clothing and light hats; dark colors absorb the heat. If you are necessarily exposed to the sun, place a wet sponge or cloth or a large green leaf in the hat. Lift the hat frequently and do not allow the sponge or cloth to become dry. If a feeling of dizziness or extreme exhaustion is experienced, stop work at once, seek a cool place and pour cold water over the head and neck.

Sleeping rooms should be well ventilated. Constipation should be avoided. The first symptoms of sunstroke are dryness of the skin and a stinging, burning sensation in the head. The face becomes flushed and the eyes are bloodshot. When such signs make their appearance a cold bath should be taken at once.

A person who is overcome by the heat should be removed immediately to the nearest shady or cool place where there is an abundance of fresh air. The clothing should be stripped from the upper part of the body and cool water be given to drink. If the person is unconscious, pour cold water upon the head, chest and wrists, until consciousness returns. Apply ice to the head and rub the body with it, unless the skin is cold. In that case use warm water. When it is practicable, the patient should be placed in a bath at 70 degrees. If the skin is hot and dry, place the patient in a sitting position against anything that will support the back. Keep a cold, wet cloth on the head and pour cold water over the patient.

PAVING AND SEWERS.

Sewerage System for Jackson.

Jackson, Miss., will soon begin the construction of a complete up-to-date sewerage system. The plans drawn by City Engineer Kirkpatrick will be reviewed by Rudolph Hering, who has visited Jackson and looked over the ground. The money to pay for the improvement, $110,000, is already in the bank. A very large number of cities in the South, by the way, are preparing for the construction of modern sewerage systems.

Creosoted Wooden Blocks.

The Indianapolis, Ind., board of works on June 28 let contracts for paving on eight streets with creosoted wooden blocks. Indianapolis is the only large city in the country that still clings to wooden pavements. The members of the public works board there seem to be partial to creosote oil, which is said to make the wooden blocks strong and durable. Creosoted wooden blocks for street paving purposes have not been considered with favor by officials of other cities.

New Public Works Director.

Alexander Troup has been appointed director of public works at New Haven, Conn., to succeed William S. Beecher. Mr. Troup is a newspaper man, being the editor of the New Haven Union. He has served in the Connecticut legislature and was internal revenue collector for his state during President Cleveland's first term. His record as a public official reflects honesty and capability in every act, and that he will creditably discharge the duties of his new position is not doubted even by his political opponents. Mr. Troup is an ardent supporter of William J. Bryan.

Street Sweeping at Stamford.

The cleanly condition of the streets of Stanford, Conn., is attracting attention from neighboring towns and cities and incidentally bringing many compliments to the Charlton pick-up sweepers which does the work at Stanford. The "Republican" says:

The Stamford streets are not only admirably swept by the new machines, but more thoroughly and infinitely quicker than by the antiquated method hitherto in vogue in this city. We have objectors to the new system, of course, but that is to be expected, and the kick is entirely from a political point of view, and not owing to any question whatever regarding the representative merits of the old and the new system.

Two Good Appointments.

Two important appointments made by the new mayor of New Haven are those of John H. Pigott as superintendent of sewers and John J. Brennan as superintendent of streets. Mr. Pigott was formerly an inspector in the public works department and is thoroughly qualified for his new position. Mr. Brennan was at one time inspector of sidewalks, and has a reputation for faithful performance of official duties. Mayor Driscoll has been fortunate in securing the services of two such men as Messrs. Pigott and Brennan to superintend the sewer and street work.

Camden Street Cleaning.

The city of Camden, N. J., will hereafter do its own street cleaning, instead of letting the work to contractors. At a recent meeting of the council street committee, the following bids were received for cleaning the streets and collecting ashes and garbage: E. B. Stone, $24,100; James Baird, $19,000; B. F. Sweeten & Son, $17,800. After some discussion the committee decided to reject all the bids and adopt the recommendation of Street Commissioner Mohrman to establish a city plant. The commissioner estimates that the plant will cost about $5,000, and that the operating expenses will be about $15,700 a year.

Advantages of Good Pavements.

Mr. George L. Wilson, assistant city engineer of St. Paul, Minn., in a recent talk before the Commercial Club of that city, said:

"If St. Paul is to obtain its full share of prosperity, it must have good pavements, the same as other leading cities. The streets of a city are the index to the character of its citizens, and nothing else produces so deep and lasting an impression on the mind of the visitor.

"Too often it has been the case in this city that the property owners, who decide the kind of pavement to be used, give the greatest consideration to the matter of first cost. The most important points to be studied are durability, smoothness of surface, and imperviousness. Any satisfactory pavement must be so constructed that it can be repaired and put back in good condition. All proper provisions for the needs of the future should be made, the object always being to attain economy of ultimate cost."

Mr. Wilson made the prediction that within a comparatively few years much of the trucking and transporting of goods on city streets would be done by horseless vehicles. Speaking of the present pavements of the city, Mr. Wilson drew close attention to the fact that statistics prove that good pavements increase the health of a community in a marked degree.

Kansas City Pavements.

For the fiscal year ended April 17, 1899, the Kansas City, Mo., board of public works reports that the work completed through the engineering department cost $1,026,530.83, and the expenses of the department for all purposes were $49,524.05. The paving work for the year is shown in the following table:

Materials.	Miles.	Square Yards.	Cost.	Average Cost per Square Yd.
Asphalt—Trinidad Lake	10.3	204,937.20	$434,961.25	$2 12
Asphalt—American Bituminous Rock	4.59	75,365.59	158,267.45	2 10
Brick	5.71	86,070.70	127,950.46	1 48
Stone Blocks	0.19	6,780.80	6,934.25	1 85
Totals	20.52	373,154.20	$728,113.41	

The aggregate mileage of paved streets in the city is as follows: Asphalt, 61.09 miles; vitrified brick, 27.76 miles; cedar blocks, 8.46 miles; stone blocks, 2.25 miles; macadam, 51.92 miles; total, 151.28 miles.

"White Wings" at Columbus.

Columbus, Ohio, now has a small army of "white wings." The credit for the introduction of this system of street cleaning is due to Director of Public Improvements Kauffman, who, of late, has inaugurated several much needed reforms. Mr. Kauffman, after some investigation, has concluded that the city's thoroughfares can be more thoroughly and economically cleaned by corps of men, uniformed in spotless white, than they can by the use of cumbersome, noisy, dust-distributing machinery, and he has definitely decided to give the system a trial. The "white wings" will be on duty only during the day, and they will be expected to keep the streets in the downtown districts, to which they will be confined, absolutely free from filth and debris. In the evening the streets will be cleaned by machinery.

Chicago Needs Better Pavements.

The Chicago "Democrat" explains why the streets of that city are dirty:

While existing ordinances are amply sufficient if enforced to prevent the littering of the streets with rubbish, the funds necessary to clean the streets thoroughly are not given the city authorities by the taxpayers, and such a thing as a clean street is almost an impossibility on many of our miserably paved streets.

Regardless of cost, can any sane person imagine that it is possible to make sweet and clean a street paved with rotten and half torn-up wooden blocks filled with disease-creating germs and the filth accumulated during a period of years?

In order to have clean streets, the taxpayer must stand the cost of the labor necessary to clean them.

In order to have clean streets, the taxpayer must pay the cost of repaving them with asphalt or bricks.

In other words, the subject of clean streets is "up to" the taxpayer and citizen.

Where there is a will there is a way, and in a city as rich and progressive as Chicago the streets should be kept well paved and clean.

The enforcement of existing ordinances will better present conditions, but the real causes of continuous dirt are the bad pavements and lack of funds to keep them clean.

—The committee on lights of the Portland, Me., council recently tested the Welsbach street lamps, with a view to introducing them in the lighting system. Several Welsbach lamps were placed in the vicinity of Monument Square and the strong, penetrating, white light given out from them made a most favorable impression on the committee and others who witnessed the test.

Asphalt Letting at Rochester.

The five contracts for asphalt paving given out at the recent letting at Rochester, N. Y., were divided as evenly as possible among the four bidders in the field. The Rock Asphalt Co. got the Frost avenue work at $52,000 and a small contract for Washington street. The Warren-Scharf Co. secured the Jefferson avenue contract at $36,000, Whitmore, Rauber & Vincinus obtained the Sherman street improvement at $43,000, and the Rochester Vulcanite Co. was given the job for Jay street at $24,738. As each contract was let to the lowest bidder, and as the bids were suspiciously close, the Rochester board of works has the impression that the contractors "got together." The average price of the work given out is about $2.15 a square yard.

The Ventilation of Sewers and Drains.*

The vexed question of sewer ventilation is a hardy annual, cropping up every summer when the weather is dry and warm, and most borough engineers put it on the list of things which "never would be missed." The subject bristles with engineering, legal and sentimental difficulties, which are unnecessarily complicated by people who have neither knowledge nor experience of the actual daily working of a system of sewers, who frighten the public by advertisements commencing with a long list of the evils supposed to be due to sewer gas, and wind up by a statement that these can all be avoided by using somebody's patent trap, cowl, disinfectant or other nostrum, at fancy prices.

Our modern systems of pipe sewerage are the growth of the fifty years since the Public Health Act of 1848, and very soon after that date Mr. Henry Austin, engineer to the General Board of Health, the forerunner of the Local Government Board, made some experiments on the subject, which in 1852 resulted in a few ventilation openings being made into the sewers at the road surface at long intervals, with a view to prevent the untrapping of closets, gullies and overflow pipes from rain water cisterns; and in 1858 Sir Joseph Bazalgette and Colonel Haywood made some elaborate experiments with a furnace in the Clock Tower at the Houses of Parliament in connection with the main drainage scheme for London; and since that date it has been generally recognized, with the one exception of Bristol, that ventilation is an absolute necessity, because if provision is not made for the ventilation of sewers and drains they will ventilate themselves in a dangerous manner; and although it is stated that the Bristol sewers are not ventilated, this probably means that no provision has been officially made with that object in view; but, nevertheless, it is more than probable that the Bristol sewers ventilate themselves through the house drains by means of the rain water pipes and ventilated soil pipes connected to the drains.

Ventilation in the past has had to bear the blame of many things for which it was not responsible; that is to say, if a sewer is badly constructed, and has not sufficient fall, no amount of ventilation will convert it into a good one; but the ventilation is often blamed for calling attention to the nuisance caused by such a sewer, and however well a sewer may be designed and constructed, it may be converted into a sewer of deposit by badly constructed street gullies or by defective or neglected buckets for catching road dirt under the ventilated manhole grids. These defects allow road dirt to have access to the sewer, and wherever this occurs an obstruction is formed, round which the solid parts of the sewage accumulate, and so form manufactories of sewer gas at short intervals along the sewer, which get worse and worse during dry weather.

The most ordinary method of ventilating sewers is by ventilating the manhole and lamphole covers at the surface of the street at intervals, which commenced in the early days at about 300 yards apart, and were gradually made more numerous until some engineers put them as close as 40 yards apart, the idea being that the nearer the approach of the sewer to a continuous open cutting the better. These distances have since been modified, until they now vary from 60 yards to 100 yards apart. During the last twenty years in some towns the street gratings have been closed, and vertical shafts erected against houses have been substituted for them, and in other towns combinations of street surface ventilators and shafts above houses have been used. Other forms of ventilation have been tried, such as connections to factory chimneys, or small gas furnaces and gas lamps, and systems of deodorising sewer gas by means of charcoal and other chemicals have been tried in addition to or in substitution for the ventilation.

As regards factory chimneys, they create a very strong draught, and are useful in the case of a long line of sewer to which there are no connections, such as the Brighton outfall sewer; but otherwise they simply draw air in from the nearest opening. There is great risk of untrapping gullies in their immediate neighborhood, and the required effect can be obtained by an ordinary shaft without the above risk. The gas furnace ventilators, which are an imitation of the action of a factory chimney on a small scale and are supposed to draw fabulous quantities of air out of many miles of sewer, do nothing of the kind, but only draw in air from the nearest openings within a radius of about 100 yards. They are too costly to be applied generally, but are very suitable as special appliances for a very bad sewer which creates a nuisance at a particular manhole. The application of costly apparatus containing charcoal and other chemicals for deodorising the gas is of very little use, and are generally merely stoppers of the ventilation, an effect which can be more easily and cheaply produced by plugging the holes in the manhole covers.

Ventilation, to perform its legitimate work effectually, must harmonize with the forces at work within and without the sewer, and it should not be called upon to deal with the foul exhalations from a badly designed and badly constructed sewer, but should be applied to well laid, properly proportioned, graded and flushed sewers, in order to deal with the watery vapour arising from the surface of the quickly flowing sewage before it has time to stagnate and putrefy; but, however well the sewer may be constructed, if the house drains and fittings connected therewith are not also properly constructed and flushed they intermittently send down putrefying sewage, which converts what would otherwise be a good sewer into an offensive one, and for which nuisance the ventilation and the surveyor get the blame.

A system of sewers consists of a number of branch sewers converging into main trunk sewers and discharging at one common outfall. At intervals of every few yards along their whole length drains are connected to them on both sides, so that a sewer is a long perforated pipe, the complement or aggregate of a number of drains discharging into it. During periods of dry weather, the time when complaints of nuisance from the ventilators are most numerous, the discharges from the drains are intermittent, the sewage flow is at its minimum in quantity and in its most concentrated condition. The flow in the sewers is continuous, but varies in quantity during every twenty-four hours, reaching its maximum in dry weather about 2 or 3 p. m., and its minimum about midnight, or later, according to the habits of the inhabitants of the particular town. Above the flowing sewage the sewers and drains are filled with air, and the sewage is about 800 times heavier than dry air, and more so when the air is charged with moisture, as it always is in a sewer.

Take the case of a well-laid pipe sewer ventilated only by manhole and lamphole covers at the road surface, every house drain connected to the sewer having an intercepting trap fixed upon it. During twenty-four hours the sewer contains varying quantities of sewage, a non-compressible liquid flowing in one direction only, and also varying quantities of air, an elastic or gaseous fluid, more or less saturated with watery vapour, filling the space above the sewage and in contact with it. If the sewer is to be self-cleansing the sewage should be travelling down the sewer at the rate of about 180 feet per minute, and at this velocity the friction between the flowing sewage and the air in contact with it almost invariably causes the latter to travel in the same direction as the sewage, but not at the same rate. This motion of the air is retarded by its friction against the crown and sides of the sewer not covered by the sewage, and also by every opening into the sewer which it meets with, and these in a sewer ventilated by this surface method only may counteract the effect of the moving sewage, and the motions of the air are feeble and little better than stagnation, except when there is a good wind. These movements may also be modified by differences in temperature between the sewer air and the outer air, but more especially in dry weather by the watery vapour always rising from the surface of the sewage, and which is a most important factor in sewer ventilation.

The greatest complaints of nuisances from sewer ventilation always arise after about a week of hot and dry weather, and the nuisance is most pronounced in the cool of the evening or during the fall of the barometer which precedes a change of weather, such as a thunderstorm. During a hot, dry time the temperature of the outer air at the ground level may range from 50 deg. up to 75 deg., or 80 deg. Fahr. in the shade during the twenty-four hours; the sewer air would range during the same period from 52 deg. to 55 deg. Fahr., or a difference of only 3 deg. in the sewer as against 25 deg. Fahr. in outer air. The outer air, being dry, has a great capacity for absorbing moisture, which doubles itself at every 27 deg. Fahr. increase of temperature, and dry air at 50 deg. Fahr. is 133 times heavier than watery vapour at the same temperature. Therefore the sewer air, although at a lower temperature than the outer air, is by means of the admixture of watery vapour continually rising from the surface of the sewage made lighter than the outer air, and consequently rises up every opening that it

*Paper by R. Read, city surveyor of Gloucester, read before the annual convention of the Incorporated Association of Municipal and County Engineers, Great Britain.

meets with, and if the temperature of the outer air is greatly in excess of that of the sewer the watery vapour is immediately dispersed on rising out of the ventilator, and is not so noticeable; but if with the fall of the barometer, or in the cool of the evening, the temperature of the air at the surface of the road is reduced to the same or a lower temperature than that of the sewer air, the vapour hangs in a cloud in the neighborhood of a manhole, and so comes in contact with the noses of passers by owing to it meeting with a stratum of air practically of its own temperature and density about 5 feet above the ground.

If in such a case as this, in consequence of complaints, the manholes are closed, and grudging permission is obtained for only one, or perhaps two, shafts for a whole street, similar action takes place at a higher level, but the sewer is not so well ventilated, the friction is greater, and there is considerable risk of some of the intercepting traps being partially untrapped. In the upper length, or dead end, of a sewer where as not much sewage between the first pair of surface ventilators, and therefore the natural tendency of the air to rise vertically against the crown of the sewer may ventilate that particular length through the summit ventilator in an opposite direction to the flow of the sewage, and thus give rise to the popular delusion that the sewer gas from the whole length of the sewer rises towards the summit. If a sufficient number of shafts are erected against houses between each pair of road surface ventilators all the road surface ventilators will then be converted into inlets and the shafts into outlets, and the ventilation will be constant in one direction, because there is always more motion in the outer air at the top of a ventilating shaft—say, 30 feet above the ground—then there is at the ground level, sufficient to create an up-current in the shafts, each set of which are practically isolated, and supplied with air by the manhole on the upper side of them acting as an inlet, this arrangement being the only one which harmonizes with the several forces above described. The only way to get a sufficient number of shafts to produce this result is to use every house drain as a ventilator, by abolishing the intercepting trap.

This useless obstruction to the flow of both sewage and air was invented by the late Mr. W. P. Buchan, of Glasgow, after the illness of the Prince of Wales in 1871, and they were introduced into the "Model By-Laws" issued by the local government board in 1877, thereby placing an obstruction from 8 inches to 10 inches deep in the flattest part of every house drain, consisting of about 3 gallons of stagnant sewage, weighing about 30 lb., which cannot be entirely cleared with a 6-gallon flush, notwithstanding that the improved forms of trap have from 2 inches to 4 inches difference of level between the house and the sewer ends of the trap. They are practically cesspools for manufacturing sewer gas, fouling both the drains and the sewers. They do not effect their supposed object of being a safeguard to the houses, as this depends, not upon the existence of the trap, but upon the soundness of the drain and its joints and the rapid removal of the sewage; and in these days, when the majority of drains are laid outside the houses, with cement joints, and tested with smoke and water tests before being used, there can be no possible danger in abolishing the traps and allowing the drains to ventilate the sewers in the natural way previously described, this being the only method by which a sufficient number of shafts can be obtained for the purpose and the formation of sewer gas prevented. There are other serious objections to the intercepting trap. It is very difficult to get the fresh air inlet into a position, away from the doors and windows, where it will not be a nuisance, as every time the drain is used the inlet of the trap is converted into an outlet, and if it is provided with a mica or other valve to prevent this the intercepting trap may have its water seal partially syphoned by the air. The result of the nuisance from the trap inlets is that many householders promptly close them, and the drain and intercepting trap is more foul than before.

If a stoppage occurs in a drain it is generally at the intercepting trap, and frequently temporary stoppages occur in the trap, which are cleared by the sewage rising in the intercepting chamber until it gets sufficient head to force the obstruction, leaving a coating of putrefying sewage all round the brickwork of the chamber. The householder knows nothing of this stoppage at the time, except by the foul air arising therefrom coming through the so-called fresh air inlet of the trap or being forced into the sewers and out through the manholes, for the benefit of the public and the unfortunate surveyor. Another serious objection to the intercepting trap is the great waste of water it causes. The experiments by the Sanitary Institute in 1893 ("Transactions," vol. 14), showed that even a 3-gallon flush left a deposit of 27 per cent. of solid matter in the traps at each discharge, and some more recent tests of 100 discharges from an actual drain specially laid from a mill at Stockport by Dr. Porter, the medical officer of health for Stockport, show that a 6-gallon flush would not clear a 6 inch interceptor and a 3-gallon flush would scarcely clear a 4-inch interceptor.

Those members of the association who are water engineers as well as borough engineers will appreciate this point, especially if they have to keep the consumption down to 16 gallons per head per day, as the author had to do for some ten years in succession. Thorough and real cleanliness should be the great object in view, and in this connection a hand-flushed closet is only a privy, and not a proper and sufficient water closet as legally defined, and a water closet cannot be kept as clean as it should be unless it is provided with a properly constructed mechanical flush; and if this is provided and the interceptor abolished 3 gallons is an ample quantity of water for the purpose.

At the Westminster district meeting of this association, in February, 1898, an important discussion occurred upon the subject of sewer ventilation, with a view to deciding the course of action to be taken by the metropolitan surveyors, at a conference which had been arranged between them and the medical officers of health to the London vestries. At this district meeting two propositions were discussed—the one to increase the number of the road surface ventilators, by placing them every 50 yards apart on the sewers, and the other to pass a law compelling every building owner in future to provide a shaft in the front of his house, and to ventilate the drain on the sewer side of the interceptor; after considerable discussion both propositions were carried; and at the conference afterwards held with the medical officers of health, Sir Alexander Binnie in the chair, the shaft proposal was adopted for recommendation to the London County Council. The author took part in the commencement of the discussion, but was unfortunately obliged to leave early to catch his train, and takes this opportunity of pointing out that the two propositions are somewhat destructive of each other, because the ventilation will take place in the direction of the line of least resistence, and if you increase the number and area of the road surface gratings in proportion to the outlet shafts above the houses you weaken the velocity and get a liability to stagnation or reversal of current, owing to its feebleness; that is to say, the greater number of shafts between each pair of manholes the stronger is the initial velocity of the air entering the manhole gratings, especially if the latter are kept small, within reasonable limits, and a strong initial velocity at the road surface inlet is necessary to enable the current to reach the furthest outlet shaft between the two inlets.

To take an ordinary example in a suburban district. In a distance of 100 yards between a pair of manholes it is possible to have fifteen houses on each side of the street, and if each house drain was ventilated by a 4-inch soil pipe carried up above the roof the sum of their outlet areas would be 12 1-2 square inches by 30x375 square inches. These would all be drawing air in at the upper manhole, having, say, 36 square inches of surface grating openings, or a ratio of more than ten to one in favor of the shafts being outlets; and a velocity of, say, one foot per second discharging from the thirty outlet shafts would cause the air to enter the 36 square inches of manhole grating at the road surface with a velocity of not less than 10 feet per second, without any allowonce for friction through the pipes. There is no occasion for alarm at this proposition, as the popular idea that the more ventilation the more sewer gas is entirely wrong, because the more perfect the ventilation the less sewer gas is formed.

The proposal agreed to by the London conference increases the number of ventilating shafts to be provided by the house owner while retaining the intercepting trap, and is a compromise which does not strike at the root of the evil, and the owner is more likely to consent to abolish the trap, as it would be less expensive to him, and, in the author's opinion, more beneficial both to the owner and the community at large. The soundness of the drain should be tested when the trap is taken out, especially if the drain passes under a house.

Decomposition is the fate of all organic matter, and if this takes place in a confined space with imperfect ventilation putrefaction is the result, as distinguished from decomposition; but in the presence of an abundance of fresh air or oxygen decomposition is effected without producing a nuisance; but, as it has before been stated, the sewage itself should not remain long enough in a sewer to decompose, and the only thing which the ventilation has to deal with in a system of well designed and constructed sewers and drains is the vapour-laden air, and it is to prevent this from becoming putrefied by stagnation that the ventilation is absolutely necessary. As an illustration of this, a considerable quantity of manure can be spread on a garden in the open air without creating a nuisance, but a very small quantity indeed shut up in a cupboard would make any house untenable.

LEAGUE OF AMERICAN MUNICIPALITIES

Ten Reasons For Membership.

Here are some of the reasons why every municipality in the United States and Canada should become a member of the League of American Municipalities and be represented at its annual convention at Syracuse.

1. The League represents the first and only united effort on the part of city officials in all departments to study the various and complex questions involved in municipal administration with a view to giving their constituents the very best of public service by the most approved methods and at the lowest cost to the taxpayers.

2. The League furnishes the organization necessary for the proper protection of municipalities against the encroachments of private contractors and corporations; through this organization fair dealing between municipal and private corporations may be secured, with proper protection of the interests and rights of both.

3. The League provides for mayors and council members, most of whom have but a limited time to devote to their official work, a ready and convenient means for securing reliable information pertaining to questions upon which they must act for their municipalities.

4. The League provides for the heads of all municipal departments an economical and prompt method for the interchange of their experiences and ideas. Methods of securing improved public service are communicated from the departments of one municipality to the corresponding departments of others.

5. The League is composed exclusively of city officials, who are in a position to study and discuss municipal problems from a practical standpoint. Real municipal reform must come through the efforts of men whose experience as city officials gives them a correct view of the conditions and obstacles that must be met, and enables them to formulate practical instead of theoretical plans.

6. It is a fact that the best municipal reform so far realized in this country is the result of studious work accomplished by the officials themselves; therefore any organization that has for its object the mutual study of municipal government by municipal officials promises good results and deserves encouragement.

7. The League is not a social organization, nor does it exist for the selfish purpose of advancing the business or professional interests of individuals; its work is exclusively to advance public interests—to improve the conditions of urban life.

8. Memberships are held in the name of the municipality, justly at the expense of the municipality, and in this way permanency of organization is assured. Every individual official of a membership city is entitled to the privileges of membership. The annual dues are exceedingly low, and the League gives to the officials of every membership city a service unquestionably worth many times the membership fee.

9. The League works not only during the few days of its annual convention, but every day throughout the year. It maintains a permanent bureau of information, which is at the service of all members at all times. This bureau furnishes reliable replies to all inquiries on municipal subjects sent to it by the officials of membership cities.

10. At the annual conventions of the League, carefully prepared papers on the most important municipal subjects are presented and discussed. The papers and discussions, which are afterwards printed in book form, bring out many original ideas and valuable suggestions for the general improvement of the municipal service.

W. J. DIEHL, Pittsburg, Pa.

JAMES GRAY, Minneapolis, Minn.

HENRY V. JOHNSON, Denver, Col.

THREE RECENTLY ELECTED MAYORS ON THE PROGRAM FOR THE SYRACUSE CONVENTION.

Mayor Johnson Not Excused.

Mayor J. A. Johnson, of Fargo, N. D., whose city was the first to join the League, has written to Secretary Gilkison that he is not sure he will be able to attend the Syracuse convention, but will make an effort to do so. The secretary then sent these words to the mayor: "You cannot be excused; the convention would not seem real without the mayor of Fargo." Mayor Johnson was the first man to arrive at both the Columbus and Detroit meetings, and the secretary is offering all kinds of long odds that he will not miss the Syracuse convention. By the way Mayor Johnson is one of the best workers in the League.

From Distant Points.

That the South and West will be strongly represented at the Syracuse convention is already assured. Mayor Flower, of New Orleans, Mayor Dudley, of Nashville, Mayor Brashear, of Houston, Tex., Mayor Weakley, of Florence, Ala., Mayor Price, of Macon, Ga., Mayor Woodward, of Atlanta, Mayor Williams, of Memphis, Mayor Johnson, of Denver, Mayor Robinson, of Colorado Springs, Col., and a number of others from distant points have already promised to be present. Minnesota, Iowa, Illinois, Indiana, Michigan and Ohio have already promised enough delegates to fill a good sized hall.

Albany in Line Now.

Albany, N. Y., is among the new members of the League, having joined about two weeks ago. In presenting the membership resolution to the council, Alderman T. D. Fitzgerald said: "It is about time Albany got in line. If the city had been affiliated with this organization for the last six or eight months, I think the aldermen would have solved the bath question long ago."

Mayor Smyth Complimented.

J. Adger Smyth, mayor of Charleston, S. C., and one of the trustees of the League of American Municipalities, has received a very handsome compliment from his fellow citizens. Several hundred of the representative business and professional men of Charleston have signed a letter urging Mayor Smyth to

stand as a candidate for re-election. The letter says: "The undersigned citizens of Charleston have viewed with the utmost approval and respect your administration of the affairs of our old city for the past four years. During that period you have encountered difficulties such as have beset no previous administration, yet you have safely piloted the city through dangerous waters and brought her out in honor and dignity. The affairs of the city have been handled by you in a business-like manner, equal regard being had for the rights of all, rich and poor. The city to-day stands upon a firm financial basis, with her securities ruling higher in the market than ever before. There are measures of vital interest to the city, inaugurated by your administration, which cannot be completed before your present term expires. We think it necessary for the welfare of the city that to the same administration which has inaugurated and mapped out should be committed the completion of these measures. Under these circumstances we feel that it is to the best interest of every citizen that we should have the same wise, business-like administration for the next four years."

Connecticut Mayors' Association.

The annual meeting of the Connecticut Mayors' Association, held at New Haven last month, was largely attended. Many matters touching the interests of towns and cities of the state were discussed. Officers for the ensuing years were elected as follows: President, Mayor Cornelius T. Driscoll, of New Haven; vice president, Mayor Cyrus G. Beckwith, of New London; treasurer, Mayor Lucius H. Fuller, of Putnam; secretary, Mayor E. L. Heath, of Rockville; executive committee, Mayor Kerr, of Danbury, Mayor Stirling, of Bridgeport, and Mayor Webster, of New Britain. The next quarterly meeting will be held at New London, September 13.

MAYOR CORNELIUS T. DRISCOLL, New Haven, Conn.

Praised by Farnsworth and Taylor.

At the recent annual meeting of the Connecticut Mayors' Association, ex-Mayor Farnsworth, of New Haven, and ex-Mayor Taylor, of Bridgeport, both of whom attended the last convention of the League of American Municipalities, spoke highly of the value of membership in the League to every city, especially on account of the valuable information on all the subjects relating to city government which is furnished to members of the association by papers read at conventions, statistics, etc. It was the unanimous opinion expressed by those present that all the cities of Connecticut should join the League of American Municipalities.

Republican Governors and Democratic Mayors.

Governor Bushnell, of Ohio, and Governor Pingree, of Michigan, have in pleasant words welcomed the League to their states and this year Governor Roosevelt, New York, will express the hospitality of his state. All of these Governors are men of great character and rare accomplishments, and the fact that they are all Republicans is remarked here merely for the purpose of pointing out the equally interesting fact that all the mayors of the convention cities—Black of Columbus, Maybury of Detroit and McGuire of Syracuse—are Democrats. All officials met on common ground at a League convention, however, and for the time being they are neither Republicans, Democrats or Populists.

THE THACKERAY INCINERATOR AT SAN FRANCISCO.

The largest garbage incinerating plant in the world is that owned and operated by the Sanitary Reduction Works Company at San Francisco, Cal. It is constructed under the Charles Thackeray patents and has a capacity of 700 tons of garbage per 24 hours. Cremation is effected without the use of fuel, other than the mixed garbage itself, and it is stated on competent authority that the actual cost of burning garbage at the San Francisco plant is from 10 to 12 cents per ton.

Hon. L. R. Ellert, former mayor of San Francisco and president of the reduction works, in a recent letter, gives some interesting information in regard to the plant. He begins his letter with an explanation of the provisions made by the local authorities for the disposal of the city's wastes and garbage, as follows:

On February 17, 1896, the city of San Francisco awarded F. E. Sharon, and his assigns, an exclusive contract to reduce or cremate, for the term of fifty years, all garbage and refuse matter, including ashes, and to charge the householders and producers at the rate of twenty cents per cubic yard upon delivery at the works, the city to receive 2 per cent. of the gross proceeds for the first fifteen years, and 5 per cent. of the gross proceeds for the remaining thirty-five years. In San Francisco, unlike the system used in most of the other cities in the United States, the garbage and ashes are mixed together, and the city does not bear any portion of the cost of removal, the cost being borne by the householders and producers. The refuse is removed by scavengers, who charge the producers a small monthly rate, and, until work began under this contract, the garbage and ashes had always been dumped on vacant lots in the city limits, designated by the superintendent of streets. This created a continuous nuisance, and proved a constant source of complaint and annoyance, and was at all times an active factor in the death rate. Upon the execution of the Sharon contract, the matter was litigated by opposing interests, and the result of the litigation was that the courts held the contract to be within the police and health powers of the Board of Supervisors, and in all respects valid and binding, and that under its terms all the garbage, ashes and refuse matter of the city, other than street sweepings and night-soil, must be delivered to the grantee, or his assigns, for reduction or incineration, as should finally be determined upon, at their works, to be constructed by him or them within two years after the date of the contract. Our sewerage system disposes of all the night-soil, and the street sweepings are covered by another contract. Thereupon the sanitary reduction works of San Francisco was incorporated under the laws of California, to which corporation Sharon, with the approval of the proper authorities, assigned his contract, and I was sent East in the interests of the company to examine into the various processes used by the different cities throughout the United States for the disposition of their refuse, and to recommend some particular system to the company that might be suitable.

Mr. Ellert then reviews the investigation he made of various garbage disposal systems in operation in Eastern cities, and explains that the utilization process could not be used in San Francisco, where the ashes and garbage are mixed, without resorting to a system of screening which would be impracticable. The letter continues:

My attention was then directed to the Thackeray incinerator, at Montreal, Canada, and I visited the plant there and watched its operation closely for several days. This plant was the only one of its kind in operation on this continent, and at once recommended itself very strongly to me, because it burned garbage, ashes, street sweepings and refuse matter all mixed together, without fuel. To see garbage and refuse, in the dead of winter (for my visit to Montreal was in the winter season), delivered at these works, frozen to a solid mass, accompanied with icicles and blocks of snow, dumped from the wagons and finding its way into the furnaces within a few hours after its arrival at the works, and there burnt clean, without the use of any fuel whatever, other than the garbage and refuse itself, which included ashes, was a revelation to me.

After a careful examination into its practical workings, I came to the conclusion that the Montreal process was exactly what was wanted in San Francisco, and I therefore recommended the Thackeray incinerator to the company. The company acted upon my recommendation, and Mr. Thackeray, the inventor, an English engineer of high standing, was brought to San Francisco to make the necessary plans and to supervise the construction of the works. The company purchased a block of ground in the southern portion of the city at a reasonable figure. The building of the works was commenced in the spring of 1897, and completed and the works turned over to the company in September of that year. The buildings consist of two incinerating houses, with the chimney between. They form together three sides of a square, 265 feet long by 95 feet wide, and two stories in height. There are sixteen large cells in each incinerating house, making thirty-two cells in all, with a grate area of 96 square feet each, making a total of 3,702 square feet of grates. Each cell has a capacity of twenty tons per twenty-four hours. The cells are the largest in the world, the nearest approach to them in size being those of the destructors used in England, the largest of which have twenty-five square feet of grate area. There are four crematory furnaces designed for the cremation of smoke, with a capacity, however, of fifteen tons, and which can be used to meet any extraordinary delivery of refuse. The chimney is 265 feet high, with a concrete foundation fifty feet square by three feet thick. From the top of the concrete to the ground line it is solid brick work forty-seven feet square, and steps back to thirty-two feet are twelve feet high. The trunk is thirty feet square by forty feet high with walls eight feet thick from the top of the trunk to the top of the house. The walls are built circular 210 feet high, which makes it 265 feet from the base. The flue is lined with fire brick fifty feet high and topped with a cast iron cap of special design. This is the largest and tallest chimney ever built to dispose of garbage and refuse in the world. All the buildings are built with solid brick walls, with galvanized iron roofs and cast iron furnaces, grate bars and hoppers. They are very substantial buildings. The workmanship has been executed in a first-class manner and the whole works are thoroughly fire-proof, doing away with the necessity of insurance. The incline roadways, platforms, office and buildings cover an area of 400 feet by 200 feet. The entire premises are surrounded by a high, grooved board fence, with an entrance and exit for the carts. At the entrance is a one-story brick office, where the cash is collected as the carts are admitted. The carts drive up inclined roadways to the top of the building and their dump their contents into chutes leading direct to the hoppers, through which the garbage and refuse is fed into the furnaces.

Upon the construction of the works a test was inaugurated and continued for some three weeks. In the making of this test there was an average consumption of about 350 tons of garbage per day of twenty-four hours. The test was in every way satisfactory, the garbage burning clean, and its

residuum, consisting of clinker and ash, being entirely free from deleterious substances. The following is an analysis of the ash and clinker made during the test run:

	Clinkers. P. C.	Ashes. P. C.
Unconsumed carbonaceous matter	1.82	6.74
Silicon Dioxide	51.91	45.54
Iron sulphide	2.73	0.75
Copper sulphide	0.86	trace
Lead sulphide	0.48	trace
Phosphoric acid	0.81	2.52
Aluminum oxide	14.30	12.71
Iron oxide	1.00	1.92
Calcium oxide	15.45	19.59
Magnesium oxide	1.89	1.26
Potassium oxide	0.82	1.46
Sodium oxide	1.73	0.83
Sulphor trioxide	1.64	4.10
Carbon dioxide	3.94	2.34
Loss and undetermined	0.62	0.24
Total	100.00	100.00

There was an utter absence of gases, fumes, odors or noxious vapors in and around the works. This test was carried out under the supervision of the mayor and Board of Supervisors, and the Board of Health. The percentage of ash, as I had anticipated, was not as large as in Montreal, but would of course increase during the winter months. A large amount of fruit, which is very plentiful here, found its way among the garbage, thus increasing the percentage of water, but it occasioned no difficulty whatever, the furnaces burning everything that came to them to a clean ash and a thoroughly metllic clinker. Upon the completion of the test, the city authorities were notified that the company was ready to handle the garbage of the city, and on the 4th of November, 1897, the Board of Supervisors, by unanimous vote, passed an ordinance directing the closing of the city dumps from and after the 8th of November, and requiring all the house refuse, butchers' offall, garbage, refuse, dirt, ashes, cinders, sludge, broken glass, crockery, tins, bones, rubbish, or other like matter, dead animals (not otherwise provided for by contract theretofore granted by the city and county) all putrid animal and vegetable matter and fish, flesh and food condemned by the Board of Health as unfit for human food, to be delivered to the incinerator of the Sanitary Reduction Works at the expense of the person, company or corporation so conveying the same, to be there cremated and destroyed, or subjected to such disposition and treatment as would secure and effect a complete combustion of all gases and odors arising therefrom. This ordinance was at once approved by the mayor, and on the 8th of November the company began burning the refuse of the city under its contract.

This plant now has been running for eighteen months. The fires kindled on the 8th of November, 1897, have never gone out. The furnaces show no sign of deterioration whatever. The only repairs in connection with the furnaces were the replacing of some bricks carelessly knocked out of position by the stokers. During the period of the running, we have reduced the pay-roll of the incinerating department from month to month. In the month of November, 1897, we employed fifty-seven men—we now do the work with twenty-five. We have sunk an artesian well which furnishes 16,000 gallons a day. The residuum, consisting of ashes and clinker, we have so far used in filling up the adjacent blocks which were below grade. As soon as these grading contracts are completed, we will convert the clinker into concrete slabs for sidewalks, paving and building bricks. The ash we will mix with animal blood and phosphates and turn into a fertilizer. In the pickings department we have erected and have in successful operation a tin baling works, which removes the solder from the tin cans. The cans are turned into sash weights for windows. We have also erected and have in operation a bottle cleaning works and a rag cleaning establishment.

The Thackeray Incinerating and Fertilizing Company, with a capital stock of $1,000,000, owns the United States patents covering the Thackeray incinerator. The main office of the company is in San Francisco, and a general Eastern office has been recently opened in the Singer Building, New York City, where Mr. Clarence F. Jewett is in charge.

—Iowa City, Ia., recently made a new contract for 100 or more electric lamps of 2,000 c. p. for street lighting. The price is $72.50, a reduction of $17.50 from the former price.

Municipal Electricians' Convention.

The National Association of Municipal Electricians of the United States and Canada will hold their annual convention in Wilmington, Del., September 5 and 6 next, at the Grand Opera House. Many members of this association hold responsible positions in various municipal electrical departments, including fire protection and police service, and valuable papers will be carefully prepared and read at the convention setting forth the developments and advancement made in mechanical and electrical appliances during the past year to the improvement of the various departments.

An electrical exhibition of merit will be held in Pyle's Cycle Academy, and exhibits of national interest will be displayed. The exhibition will open September 4, 7.30 p. m., and continue till September 9, 11.30 p. m.

The Wilmington board of trade has taken a deep interest in the convention and exhibition, and has appointed a committee of representative business men to assist in entertaining the visitors to the convention, and to further the business interest of the city.

President J. W. Aydon, of the association, in a circular letter sent out on July 4, says:

We are living in a progressive age, and as both the protection of human lives and property are vital subjects, it is very evident that we are directly interested in public matters, and should have the attention and encouragement of every thoughtful citizen. Wilmington is beautifully situated between the Christiana River and the historic Brandywine River and borders on the Delaware River. It is 27 miles south of Philadelphia, 117 south of New York city, 70 miles north of Baltimore, and 110 miles north of Washington, thus making it midway between the cities of New York and Washington, and is on both the Pennsylvania and Baltimore & Ohio railroads. I herewith extend a cordial invitation to you and your friends to visit us during the convention week, and I can assure you that it will be a successful affair in every particular. Among other committees appointed by the Board of Trade is a committee of Wilmington ladies who will entertain the visiting ladies, and I desire to impress you with the fact that ladies will be very welcome, and hope when you make up your party that you will remember them. Headquarters will be at the Clayton House, Fifth and Market streets. Kindly advise me not later than August 10 how many will be in your party, as it will be necessary for me to know in order to complete arrangements with the Trunk Line Association of New York regarding reduced rates of fare.

President Aydon is chairman of the convention committee of the Wilmington Board of Trade.

Independent Telephone Convention.

The third annual convention of the Independent Telephone Association was held at Chicago during the last week of June, 350 delegates from 18 states being present. President James H. Thomas of Chillicothe, Ohio, in his address, declared the necessity of the union of local telephone systems with the state companies and these with one grand national system on an equitable basis. The annual election of officers resulted as follows:

President—James H. Thomas, Chillicothe, O.

First Vice President—Charles Flower, Detroit.

Secretary-Treasurer—S. P. Sherin, Indianapolis.

John W. Mackay, the bonanza king, attended the convention, and it is said that he is to back a consolidation of the independent telephone companies for the purpose of competing with the Bell corporations.

Tax Assessment for New York.

The municipal assembly of the city of New York has received from the tax department the assessment rolls for 1899. The entire assessed valuation of real and personal estate for the year 1899 is shown by the following table:

Borough.	Real estate.	Personal.	Total.
Manh'ttan	$2,054,903,875	$483,575,942	$2,538,479,817
Bro'klyn .	609,822,267	45,270,713	655,092,980
The Br'nx	123,702,030	6,806,988	130,509,018
Queens ...	103,752,600	6,314,032	110,066,632
Richmond..	40,264,692	3,838,890	44,103,582
Gr'nd t't'l	$2,932,445,464	$545,806,565	$3,478,252,029

Following is a comparative statement of the assessed valuation in the several boroughs for the years 1897,1898 and 1899. In the boroughs of Brooklyn, Queens and Richmond the figures for 1898 do not appear, as the taxes in the counties from which those boroughs were constructed were collected in advance. The assessment for 1897, therefore, was the last one made in those sections, and it is used for purposes of comparison:

Borough.	Real Estate. Assessed Valuation. 1897-1898.	Real Estate. Assessed Valuation. 1899.	Increase.
Manhattan, (1898.)	$1,754,982,400	$2,054,903,875	$299,921,475
Bronx, (1898.)	101,585,523	123,702,030	22,116,507
Brooklyn, (1897.)	570,107,742	609,822,267	39,714,525
Queens, (1897.)	77,486,225	103,752,600	26,266,375
Richmond, (1897.)	24,371,551	40,264,692	15,893,141
Total....	$2,528,533,441	$2,932,445,464	$403,912,623

Originally the assessments on personal estate for this year were announced as being in round numbers $8,000,000,000. The completed books show, however, that the assessment, after the usual reductions by "swearing off," amounts to only $545,806,565. This includes the personal assessments against corporations as well as individuals.

The gross budget amounts in round numbers to $93,500,000. Controller Coler, in a recent report to the municipal assembly, stated that there was in the general fund about $9,000,000, which is to be deducted from the gross budget, leaving as the net amount to be raised by taxation $84,000,000. Besides this the municipal assembly can add from $1,000,000 to $1,500,000 for delinquences, and then the deficit of $7,000,000 from last year must be apportioned among the several boroughs and added to the amount to be raised.

Accurate figures therefore cannot be given as to the amount to be raised by taxation until the tax books are returned to the receiver of taxes. Nor can the tax rate be estimated with any accuracy. If a uniform rate could be fixed for the entire city it would be about $2.40 for each $100 of assessed valuation, computing with the figures at hand. Instead, however, the heaviest charge will fall on the borough of Manhattan, and the lowest on the borough of Richmond.

—The Montauk Multiphase Cable Company will soon have ready for issuance a revised price list. This has been made necessary owing to the recent advance in metals. All price lists heretofore issued are subject to this revision. A new book is being made ready for the press, and will soon be issued, giving data for specifications and plans of buildings showing the installation of the cables; also directions for installing. Copies of the same will be forwarded upon application.

Street Lighting by Gas.

Returns on street lighting by gas have been received by the bureau of information of the League of American Municipalities from 90 cities, 54 of which, or 60 per cent., report that the use of gas for street lighting has been discontinued. The returns from four cities are incomplete and unsatisfactory for publication. Nine cities report the use of Welsbach gas lamps for street lighting, viz.: Cambridge, Mass., with 270 lights; Florence, Ala., with 54; Grand Rapids, Mich., with 50; Haverhill, Mass., with 202; New Haven, Ct., with 205; New York City; Omaha, Neb., with 906; Somerville, Mass., with 72, and Worcester, Mass., with 300. All of these Welsbach gas lamps are of 60 c. p., and the standard price, per lamp, burning 4,000 hours, is $30.00 per year. It is but fair to state in this connection that in all cities where Welsbach lamps have been introduced they have given complete satisfaction. In New York city the number of Welsbachs is being constantly and rapidly increased, there being a strong demand, especially along the residential streets, for the displacement of plain gas lights by the new incandescent lights.

The table published herewith gives the returns from 24 cities using plain gas lamps. The candle power of the lamps is not given in the table, nor is it taken into consideration in presenting the comparison of prices. The returns from these cities state that the candle power of the lamps varies from 16 to 22 in the different cities, but in very few of these places are the lamps officially tested as to their illuminating power. All those who have made careful investigation of the subject will agree that the candle power specified in contracts for gas street lights has only a nominal significance; therefore a consideration of this factor in presenting statistics showing the cost of gas lights cannot be made with authenticity. A difference of four or five candle power in gas lights used out of doors is scarcely discernable without the use of scientific testing apparatus, and the value to the wayfarer of such a slight increase in illuminating power in his street lighting is questionable.

The most interesting fact brought out by the figures in this table is that most cities are provided with gas for their street lamps at a much lower price than is charged private consumers. It will be observed that twenty out of the twenty-four cities buy gas for public lights for from 26 to 95 per cent. of the rate charged private parties. The cost of the gas per thousand feet for street lights is computed by deducting from the contract price, per lamp, a fair amount to cover the expense of furnishing lamp-posts, globes, lighting, extinguishing and care-taking, and then dividing the sum remaining by the number of feet of gas consumed per lamp, per year. In five of the cities contained in the table the municipalities provide their own lamp-posts and globes, do their own lighting, extinguishing and care-taking, and pay to the gas companies merely for the gas consumed at so much per thousand feet. In these five cities the cost per lamp, per year, of furnishing the posts and globes, lighting, extinguishing and care-taking is accurately determined. This service costs $9.63 in Baltimore, $10.60 in Lowell, $7.80 in Minneapolis, $10.21 in Nashville and $8.75 in Providence, an average of $9.40, which is taken for a fair allowance to be made to represent the same service in the other cities. Another justification for adopting this average of $9.40 is the fact that officials of the Consolidated Gas Company of New York city have stated that it costs them about $5 per year, per lamp, for lighting and extinguishing alone, the posts and globes being furnished in New York by the municipality. It is fair to presume that the cost of lighting and extinguishing gas lamps in New York is less than it would be elsewhere on account of the vast number and the comparatively close location of the lamps.

STATISTICS ON GAS STREET LIGHTING CONTRACTS.

PLACE	Total No. of Street Gas Lights.	Hours Burned Per Lamp Per Year.	Gas Consumed Per Lamp Per Hour, Feet:	Gas Consumed Per Lamp Per Year, Feet:	Contract Price Per Lamp Per Year.	Deduct for Lighting, Extinguishing and Care-taking.	Cost Per Lamp Per Year, for Gas.	Cost of Gas Per 1,000 ft. for Street Lights.	Net Price of Gas to Private Consumers per M.	Per Cent. of Private Rate Charged for Public Lights.
Buffalo, N. Y.	5,550	3,948	4	15,792	$14.67	$ 9.40	$ 5.27	$ .33	$1.00	33
Baltimore, Md.	5,535	3,900	5	19,500	34.00*	9.63	24.37	1.25	1.25	100
Beverly, Mass.	7	2,250	5	11,250	20.00	.00	20.00	1.77	1.60	110
Charleston, S. C.	856	2,179	5	10,895	16.62	9.40	7.22	.66	1.60	41
Des Moines, Ia.	676	2,250	5	11,250	17.00	9.40	7.60	.67	1.25	53
Fitchburg, Mass.	20	3,900	4	15,600	20.00	.00	20.00	1.28	2.00	64
Ft. Madison, Ia.	117	3,900	4	15,600	20.00	9.40	10.60	.67	1.25	53
Hot Springs, Ark.	36	2,250	5	11,250	27.00	9.40	17.60	1.56	3.00	52
Kansas City, Mo.	1,800	2,000	5	10,000	12.00	9.40	2.60	.26	1.00	26
Kingston, N. Y.	7	3,800	4	15,200	18.00	9.40	8.60	.56	1.80	34
Lowell, Mass.	925	2,100	4	8,400	19.00††	10.60	8.40	1.00	1.00	100
Lockport, N. Y.	95	3,900	4	15,600	17.00	9.40	7.60	.48	1.50	32
Lafayette, Ind.	20	3,600	6	21,600	20.00	.00	20.00	.92	1.25	73
Minneapolis, Minn.	4,731	3,900	4	15,600	23.40†	7.80	15.60	1.00	1.30	76
Madison, Wis.	46	2,250	4	9,000	27.00	9.40	17.60	1.95	1.75	111
New York, N. Y. (a).	25,000	4,000	3	12,000	20.42	9.40	11.42	.91	1.10	82
Newark, N. J.	2,012	4,000	4	16,000	19.00	9.40	9.60	.60	1.10	54
Nashville, Tenn.	470	2,250	6	13,500	16.96**	10.21	6.75	.50	1.00	50
New Haven, Conn.	600	4,000	4	16,000	22.25	9.40	12.85	.80	1.25	64
Newton, Mass.	952	2,000	4	8,000	16.00	9.40	6.60	.82	1.35	60
Providence, R. I.	763	4,000	5	20,000	29.75‡	8.75	21.00	1.05	1.10	95
Phœnixsville, Pa.	55	3,900	5	19,500	23.50	9.40	14.10	.72	1.50	48
Richmond, Ind.	58	2,200	5	11,000	20.00	9.40	10.60	.96	1.20	80
St. Paul, Minn.	2,648	3,900	5	19,500	23.00	9.40	13.60	.69	1.30	53

(a.)—In New York City, Borough of Manhattan and the Bronx, contracts for gas street lights are made with several companies, with prices ranging from $12 to $28 per lamp per year; $20.42 is the average price.

* Baltimore, Md.—This city does its own gas lighting, buying the gas at $1.25 per thousand cubic feet. As lamps are burned 3,900 hours a year and consume five feet of gas an hour, the year's consumption for each lamp is 19,500 feet, which at $1.25 per thousand, would amount to $24.37. It costs the city an additional $9.63 per lamp, per year. for lighting, extinguishing, care-taking, repairs, etc., making the total cost per lamp $34.00 a year.

†† Lowell, Mass.—This city has the same system employed at Baltimore. It pays $1.00 per thousand feet for gas, and as lights burn 2,100 hours a year, consuming four feet an hour, each lamp requires 8,400 feet of gas per year, at a cost of $8.40. For pay roll, repairs and all other expenses, the amount spent last year equaled $10.60 per lamp, making the total cost $19.00 per lamp per year.

† Minneapolis, Minn.—This city has recently adopted the plan of lighting, extinguishing and taking care of its gas lamps. The total cost of a light per year, including every item, is estimated by the lamp department at $23.40. Each lamp consumes 15,600 feet of gas, which is supplied at $1.00 per thousand, making the cost of gas $15.60 per lamp per year. The difference between this item and the total estimated cost ($23.40) is $7.80. which represents the charge per lamp for care-taking, etc.

** Nashville, Tenn.—This city gets its gas for street lamps at 50 cents per thousand, one-half the commercial rate. Each lamp consumes 13,500 feet a year, which costs $6.75. Other expenses amount to $10.21 per lamp, per year, making the total cost $16.96.

‡ Providence, R. I.—This city buys gas for its street lights at $1.05 per thousand feet. Each light consumes 20,000 feet a year, at a cost of $21.00. The lighting, extinguishing and care of the lamps is done under contract at $8.75 per lamp per year, making the total cost $29.75.

Gas Street Lighting in Boston.

The new contract for gas street lighting in Boston, which has lately been approved by the mayor, involves a radical departure in the system and in the gas lamps themselves. Instead of having the street lamps under the direct charge of the city, and having the lighting done by lamplighters employed by the city, entirely new gas lamps, of a much more ornamental pattern, are to be installed at the expense of the contractor, and the company assumes the full responsibility and expense of maintaining the lamps, and makes its own arrangements with the gas companies for gas supply. The new lamps will be of the so-called "Boulevard" pattern which have been

extensively introduced in a few other large cities, and the use of which is rapidly extending, and the main feature of the lighting will be the use of the Welsbach mantle.

Mayor Quincy and Superintendent Donavan have been carefully investigating the whole question of street lighting by the use of the mantle for several months, and have visited a number of other cities for this purpose, and they only entered into the contract when thoroughly convinced that gas lighting by the use of the incandescent mantle was thoroughly established as the modern method of street illumination, and that it would give a greatly increased light at substantially the same price which the city has been paying. They believe that under this contract Boston will be made one of the best lighted cities in this country, if not in the world, and that as soon as the new lamps are installed the public will heartily approve the change. While they would have preferred to have the city continue in direct charge of the lamps, they become satisfied that, on account of the control of this field by numerous patents, and on account of the special care required for the maintenance and renewal of the mantles, it was not practicable to introduce this system of lighting otherwise than by contract, and all other cities in which this system of lighting has been introduced have been obliged to adopt the contract system; it has been arranged, however, with the contractor that all lamp lighters and employees now in the service of the city are to be taken into the service of the contracting company at the same wages.

Danville Gas and Electric Light Works.

That the municipal gas and electric light works at Danville, Va., are successful is evident in the annual report of Superintendent C. A. Ballou. In the gas department the year's receipts amounted to $22,515.35, of which $20,434.05 was for gas sold and $2,081.30 for coke, lime and tar. The total disbursements were $16,184.14. Taking into consideration the fact that the department furnished $942.80 worth of gas free to public buildings, the total net earnings for the year are shown to amount to $7,274.01. The plant has 9.91 miles of gas mains and 771 private services; no gas lamps are used for street lighting. Superintendent Ballou says:

When the city purchased the gas works they were in very bad condition, and the price of gas was $4.00 net per thousand feet. It has been the policy of the various councils of past years not to make the gas works a source of revenue to the city, but to furnish gas at such a price as to make the receipts therefrom only sufficient to pay the expenses of operating and maintaining the plant—not estimating interest on the cost of the works. As the works were improved, coal became cheaper and the patronage increased, the price of gas was reduced from year to year. The last reduction was made in 1894, when the price was fixed at $1.25, with 20 per cent. discount for prompt payment, making the net price $1.00 per thousand cubic feet. During the past five years the net earnings have increased from year to year and have now reached a point where we would be warranted in reducing the price of gas to 75 cents per thousand feet, net.

For the electric light department the total disbursements were $4,661.71, and the total receipts from the commercial circuit were $1,992.43, showing the net cost of lighting the streets to have been $2,739.28. For this amount 129 arc lamps for public lighting were provided, making the cost per lamp per year $21.23. This does not take into consideration charges for interest and depreciation.

MODEL STREET RAILWAY FRANCHISE.

Through the intelligent efforts of Mayor Thomas Taggart and other officials of his administration the city of Indianapolis has reached a most satisfactory solution of the street railway problem, which has been bothering the people of that municipality for several years. The situation had become rather complicated, with one company claiming a perpetual and exclusive franchise, another company claiming a franchise for thirty years from 1901, an act of the legislature limiting street car fares to three cents, another act declaring the franchise of the company then operating to terminate in 1901, and conflicting decisions of state and federal courts as to the rights of the various interests involved. To bring order out of this chaotic condition the legislature of this year enacted a statute authorizing the city to enter into a contract with any company that might be able to procure and surrender all outstanding street railway franchises. Under the provisions of this act a franchise has recently been granted to the Indianapolis Street Railway Company, which undertakes to surrender to the city all the franchises heretofore held by all the street car companies.

This new franchise, which is a model one, is in the form of a contract between the board of public works, acting for the city, and the company. The contract has been confirmed by ordinance of the city council. It gives to the company the right to operate electric street railway lines on various streets, all of which are specified, for a term of 34 years; provides for four-cent fares; secures to the city cash payments amounting to $1,160,000 for the rights granted; provides for the purchase of the plant by the city at the expiration of the 34-year term, and in many other ways thoroughly protects the interests of the people. The contract says:

The right hereby granted to the said company, party of the second part, to maintain and operate its street railway lines or any part thereof in said city shall continue for a period of thirty-four (34) years from the taking effect of this contract, and all terms, conditions and covenants of this contract shall be binding and conclusive for that period on both the parties hereto, but all such rights, conditions and covenants are hereby expressly limited to said period of thirty-four (34) years, which period shall begin on the taking effect of this contract and end thirty-four (34) years therefrom.

This limitation of time is agreed to be one of the chief considerations for the grant hereby made, and the said party of the second part, recognizing and conceding that such limitation of time as herein expressed is one of the essential and governing conditions of this contract, does hereby bind itself, its successors and assigns, that at the expiration of said period it will peaceably yield possession of every part of every street, alley, avenue and public place in said city then occupied by any of its lines of street railway, and cease the operation of its said street railway plant or system and every part thereof, and from thenceforward will make no claim of any kind to exercise any right whatever under the grant herein made, or under any charter or corporate right, and any rights which might be claimed by said company, party of the second part, or its successors or assigns, to hold beyond said period of time, under the statute under which it was incorporated, or under any other enactment prior to this date, or which might have been derived from any other source, are herein and hereby expressly waived.

And the said company, party of the second part, agrees and binds itself, its successors and assigns, that it will not execute any mortgage or mortgages, or create any other liens to secure any bonds or other evidences of indebtedness which shall mature after the period above fixed at which the franchise herein granted shall expire, and if at any time during the existence of this contract any such mortgage is executed, or any such lien is created, then all the rights of the said party of the second part herein conferred shall cease and determine, and said party shall at once yield peaceable possession of all parts of every street, alley, avenue or public place occupied by any part of its said street railway system.

As to fares and transfer privileges the contract reads:

It is also agreed by and between the said parties, that during the period for which this franchise is granted the said company, party of the second part, may charge and shall be entitled to receive the following rates of fare, and no more: For each passenger over the age of five years who shall pay cash fare, the sum of five cents, which cash payment shall entitle such passenger to ride to the end of the line on which he has taken passage, or, at the option of the passenger, he may demand and receive from the conductor of the car upon which he first took passage a transfer ticket without additional charge, which fare and transfer ticket shall entitle such passenger to ride upon said car upon which he has taken passage to the point where said line first intersects with the line to which such passenger desires to be transferred, which shall be plainly indicated on said transfer ticket, and after arriving at said point of intersection such passenger may take passage on any car on the line indicated on his said transfer ticket, and on the surrender thereof to the conductor of such car shall be permitted to ride to the end of the last named line: Provided, That any such passenger holding such transfer ticket must take passage on the line indicated thereon within the distance of one square from the point of intersection aforesaid, upon the first car leaving such point after he has left the car on the line on which he first took passage; and, Provided, further, That if the cars on the line upon which such passenger first takes passage and those of the line to which he is transferred run upon the same track from the point of their intersection for a distance to a point where such lines diverge, then any such passenger holding any such transfer ticket may ride on the first named line either to the point of intersection as aforesaid, or, at his option, may proceed on said car to the said point of divergence between said lines, where he may effect the transfer, under the restrictions and regulations aforesaid.

Every passenger car run and operated by said company, party of the second part, on any of its said lines shall be provided with a conductor, who shall collect fares and attend to the convenience and comfort of the passengers upon such car. Each of such conductors shall constantly have in his possession an ample and adequate supply of tickets, to be sold and delivered to all passengers desiring the same, and said company may charge and shall be entitled to receive for the same during the period for which this franchise is granted the following rates, and no more: For six (6) of such tickets, twenty-five cents ($0.25); for twenty-five (25) of such tickets, one dollar ($1.00).

The contract specifically provides that the service shall be first-class at all times, and that if during the period of the franchise some other motive power superior to electricity shall come into general use such power shall be adopted by the company on order of the board of public works and the city council. The entire operating system of the company is to be open to inspection by the department of public safety at all times and said department is given power to order any changes it deems necessary to insure the safety of the public and prevent damage to property. The company is required to pave and repair its right of way by the following section of the contract:

The said company, party of the second part, shall pave the space between all rails, including the space between its tracks where there are double tracks, switches or side-tracks, and for a distance of eighteen (18) inches on the outside of the outside rails of its tracks, and shall make all necessary repairs in said space, under specifications both as to material and manner as may be provided by the Board of Public Works, and shall repave the same when necessary and ordered by the said Board, and keep the same in repair, said paving and repairing to be done under specifications, both as to material and manner, as may be provided by the said Board, and under the supervision of the city engineer of said city; and said company shall also keep in repair that part of the floors of all bridges or culverts crossed by any of its tracks which is situate between the outer rails of said tracks and for a distance of eighteen (18) inches on the outer side of

such outer rails, and also the space between the tracks where there are double tracks; and in case of failure on the part of said company to make any such improvement or repairs as aforesaid, either to streets, avenues or alleys or bridges as herein provided, upon reasonable notice by said Board, then the said Board of Public Works shall have the right to proceed to make any such improvement or repairs, and the cost of making the same shall be paid by said company to the city on demand, and the collection thereof enforced as any other valid debt.

And it is also agreed by and between said parties, that the party of the second part shall at all times during the period of this franchise keep on deposit in the city treasury, to the credit of the said Board of Public Works, the sum of one thousand dollars ($1,000), to be designated as an Emergency Fund. Whenever, in the opinion of said Board of Public Works, an emergency arises for the immediate repair of any dangerous defect found to exist in that part of any street, alley, avenue or public place required by this contract to be kept in repair by said company, and the said company has failed on notice to immediately repair the same, the said Board shall cause said repair to be made at once, and if said company shall not promptly pay the bill for the cost of such repairs, when made out and presented at the office of the said company in said city, then said Board may draw the amount of such bill from said emergency fund, which fund shall be reimbursed by said company without any delay and kept up to said amount of one thousand dollars as aforesaid.

This provision as to an emergency fund is in addition to all other provisions herein contained on the subject of repairing streets, and is not intended to modify or change any other provisions or penalties of this contract concerning the same.

In any case where the tracks, side-tracks, switches or turn-outs of any street railway line or lines of the said company, party of the second part, are situated on any street, alley, avenue or public place in said city, and the said Board of Public Works shall by resolution order the improvement of that part of any such street, avenue, alley or public place not lying between the outside rails of any such tracks, side-tracks, switches or turn-outs, nor within eighteen inches on either side of such outer rails, and shall let a contract for the improvement of any such part of any such street, avenue, alley or public place, then the said company agrees and binds itself, its successors and assigns, that it will, on the request of said Board of Public Works, proceed to improve that part of such street, avenue, alley or public place that is situated between the outer rails of such outside tracks and the space between tracks where there are double tracks, side-tracks, switches and turn-outs, and within eighteen inches of said outer rails of such outer tracks, in the same manner and with the same material and under the same specifications that the improvement of the other part of such street, avenue, alley or public place is being made, by the contractor to whom such contract has been awarded. That it will proceed with such improvement under the direction of the Board of Public Works and City Civil Engineer, with the same diligence that is shown by the said contractor, so that the said improvement to be made by the said company shall be completed when the improvement of the other part of such street, avenue, alley or public place shall have been completed by any such contractor. Provided, That by agreement between said Board of Public Works and the said company, the said improvement to be made by said company may be constructed of other approved material under the order and supervision of said Board.

It is agreed that the board of public works shall have the power to order reasonable extensions to the various lines of railway. The board is also given the right to make and enforce the time schedule for the running of cars. The payment of $1,160,000 to the city is provided for as follows:

In further consideration of the grant hereby and herein made, and in part payment therefor, the said company, party of the second part, agrees and binds itself, its successors and assigns, to pay to the said city, party of the first part, the sum of one million one hundred and sixty thousand dollars ($1,160,000.00) in the lawful money of the United States, which moneys shall be paid into the treasury of said city at the times hereinafter designated, and shall be expended for public park purposes, under the direction of the Department of Public Parks of said city.

Said sum of money shall be paid as follows: Thirty thousand dollars ($30,000.00) on or before the 1st day of May, 1899, and the sum of thirty thousand dollars ($30,000.00) on or before the 1st day of May of eacn year thereafter, during the first twenty-seven (27) years of the existence of the franchise hereby granted, and the sum of fifty thousand dollars ($50,000.00) on or before the 1st day of May of each year thereafter during the remaining seven (7) years of the existence of the said franchise.

If the said company, party of the second part, should fail or refuse to pay any installment of said amount within thirty (30) days after the same shall become due as above stipulated, then, and in that event, all the rights of said company herein granted shall cease, and it shall peaceably yield possession of all the streets, avenues, alleys and public places of said city and every part thereof, and make no further claim to occupy any part of the same, and in case of such default in the payment of any one of such installments, then the whole amount of said sum of one million one hundred and sixty thousand dollars ($1,160,000.00) which may be then unpaid shall become due and payable.

The payment of such installment shall be in lieu of all license and special taxation hereafter imposed, but shall not affect the liability of said company to general taxation.

It is further provided that the company is to spend $1,000,000 for the improvement of the service, and is to lease to the city a piece of property known as the Sheldon street barn at the nominal rental of $1 per year. The option of the city to purchase the plant is set forth as follows:

It is also agreed by and between the parties hereto, that the said city of Indianapolis may at any time within two years and not later than one year before the expiration of this contract, and the period for which this franchise is granted, purchase of the said company, party of the second part, its successors and assigns, its property of every description whatever, but the value of the franchise hereby granted shall not be included or considered in estimating the value of said property, it being the intention of the parties hereto that the value of said property to be agreed upon shall be the actual value thereof, independent of all franchise rights hereunder—the said city to pay nothing for franchise rights; and if the said city and the said company shall be unable to agree upon the terms of such purchase, then such city may file its complaint or petition in the Circuit Court of Marion county, Indiana, for a determination of the value of such property, in the manner provided and prescribed in section eight (8) of the act of the General Assembly of Indiana hereinbefore last referred to, which section is made a part of this contract by reference; and when the value of such property is so ascertained, such city of Indianapolis may, upon the expiration of this contract, after tendering the amount of the value of such property, as determined by said court, at once take possession of such property, and operate such street railroad for its own use and purposes.

The contract contains all the usual provisions for the protection of the public interests.

City Government of Dayton.

There is no city of its size in the middle west more beautiful or more enterprising than Dayton, Ohio. It has a much mixed system of government. The mayor is a more important official than in other cities of its class. Of the eleven boards created to administer the affairs of the city he appoints five and could control a sixth—the board of police commissioners—as it is created by the tax commissioners who are appointed by him.

The police department is a model for its size, in so far as discipline and efficiency are concerned, but Chief Farrell and his force are largely handicapped for lack of liberal support and adequate equipment.

The fire department is under the efficient management of Chief D. C. Larkin. It is fairly well equipped and in discipline and service is unexcelled. The chief is underpaid when his multiplied duties are considered. By his own initiation he has trained his men to discharge the duties of a salvage corps and what to do till the doctor comes in all accidents, so that the Dayton fire department comes up to the standard of a much larger city maintaining these different phases of the work at a much larger expense.

The water department is under the control of three trustees elected by the people for a term of three years. Mr. Charles E. Rowe is the secretary of the board and active administrator of its affairs. It is to his genius as a systematizer that the affairs of the office as well as productiveness of the whole department is largely due. The quality of water is very good. The finances of this department are in excellent condition as the following statement will show.

RECEIPTS.

From water rent	$72,974 91
For 1,064 hydrants at $50 each	53,200 00
For 300 other free taps for flushing sewers, etc	7,000 00
Total	$133,174 91

DISBURSEMENTS.

Operating expenses	$34,521 50	
Bonds and interest for 1898	26,195 00	
Paid for improvements, 1898	34,432 37	95,148 87
Net receipts		$38,026 04

And yet the water rates are not high in comparison with many other plants, as the following schedule, which has just taken effect will show:

For the first 150,000 gallons per quarter, 8 cents, and all in excess of that amount at 6 cents. A rent of $2.00 per year is charged for all meters, which is extra. No charge less than the following will be made per quarter, according to the size of the meter:

For 1¼ inch (or under), 1,000 cubic or	.60
For 2 inches, 5,000 cubic feet, or	3.00
For 3 inches, 7,500 cubic feet, or	4.50
For 4 inches, 15,000 cubic feet, or	9.00
For 6 inches, 30,000 cubic feet, or	18.00

Baths in Public Schools.

The placing of baths in public school houses has been given some attention, and in time the matter will doubtless receive sufficient approval from the public to insure its general adoption. Boston furnishes the best example at present. The Paul Revere school building in that city has its basement fitted up with bathing facilities for the use of the attending children. There are two entirely separate apartments, one for boys and one for the girl pupils. Thirty children can bathe in each section at one time, a towel and piece of soap being furnished to each bather. The janitor looks after the boys and a matron has charge of the girls, and give practical instruction in bathing and in the art of cleanliness in each case. These baths are an experiment so far, but if they succeed the same facilities will be furnished to the other schools.

—The wages of laborers employed by the city of San Francisco and by contractors on municipal work is fixed by law at $2 per day, and eight hours constitute a day's work.

—The city of Buffalo, N. Y., continues to agitate the question of a municipal gas plant. Another step toward it has been taken by the board of aldermen. A resolution has been passed instructing the corporation counsel to prepare an act by which the city of Buffalo can bond itself for the necessary amount to construct a plant to supply light, heat and electric power, or either of such commodities.

"Contracting and Purchasing Directory."

PLEASE MENTION CITY GOVERNMENT IN WRITING.

ALARM SYSTEMS, FIRE AND POLICE.

Gamewell Fire Alarm Telegraph Co., 19 Barclay St., New York.

ASPHALT.

Alcatraz Co., San Francisco and New York.
Assyrian Asphalt Co., Chicago.
Columbia Construction Co., Syracuse, N. Y.
Compagnie Generale Des Asphaltes de France, 32 Broadway, New York.

BONDS.

Rudolph Kleybolte & Co., New York.
The Audit Co., New York.

BAG CARRIERS.

F. C. Austin Mfg. Co., Harvey, Ill.
Thornton N. Motley Co., 43 John St., New York.

BOILERS.

The Murray Iron Works Co., Burlington, Iowa.

BOILER COMPOUND.

Boogher Boiler Compound Co., 220 Broadway, New York.

BRIDGES.

The La Fayette Bridge Co., 800 Perin Building, Cincinnati, O.

CEMENT.

Atlas Cement Co., 143 Liberty St., New York.
Assyrian Asphalt Co., Chicago.
Buckeye Portland Cement Co., Bellefontaine, Ohio.
Thorn Cement Co., Buffalo, N. Y.

CHEMICAL ENGINES.

Fire Extinguisher Mfg. Co., 325 S. Desplaines St., Chicago, Ill.

CIVIL AND CONSULTING ENGINEERS

J. T. Fanning, 330 Hennepin Ave., Minneapolis, Minn.
Alexander Potter, 137 Broadway, New York.
Wise & Watson, Passaic, N. J.
Charles Carroll Brown, C. E., Bloomington, Ill.
Edward D. Bolton (Landscape), 224 West Seventy-ninth street, New York.
W. D. Lovell, Des Moines, Iowa.

CONTRACTORS.

Assyrian Asphalt Co., Chicago.
J. H. Esson, Chicago.

COUPLINGS, HOSE.

The W. J. Clark Co., Salem, Ohio.

DAMP COURSE.

Assyrian Asphalt Co., Chicago.

ENGINES.

The Murray Iron Works Co., Burlington, Iowa.

ELECTRICAL APPARATUS.

The Siemens & Halske Electric Co., Chicago.

FILLER, ASPHALT.

Assyrian Asphalt Co., Chicago.

FIRE APPARATUS.

E. Howard Browne, 105 Reade St., New York.
Fire Extinguisher Mfg. Co., 325 S. Desplaines St., Chicago, Ill.
Seagrave & Co., Columbus, Ohio.

FIRE EXTINGUISHERS.

Fire Extinguisher Mfg. Co., Chicago.

FIRE FELT COVERING.

H. W. Johns Mfg. Co., 100 William St., New York.

FIRE HOSE.

E. Howard Browne, 105 Reade St., New York.
Fabric Fire Hose Co., 68 Murray St., New York.
Gutta Percha & Rubber Mfg. Co., 35 Warren St., New York.
Mineralized Rubber Co., 18 Cliff St., New York.
Manhattan Rubber Mfg. Co., 18 Vesey St., New York.
New Jersey Car Spring & Rubber Co., Jersey City, N. J.
Peerless Rubber Mfg. Co., 16 Warren St., New York.
Tate & Co., Chicago.

FIRE ESCAPES.

Harris Safety Co., St. James Bldg., New York.

FIREMEN'S HATS.

John Olson, 183 Grand St., New York.
A. Wilson, 135 Bowery, New York.

FLOORS, ASPHALT.

Assyrian Asphalt Co., Chicago.

FLUSH TANKS.

Pacific Flush Tank Co., Chicago, Ill.

FOUNTAINS, PARK AND LAWN.

J. L. Mott Iron Works, 84-90 Beekman St., New York.

FRENCH PUMPS.

Edson Mfg. Co., 132 Commercial St., Boston.

GULLY CLEANERS.

Henry W. Atwater, 72 Imperial Bldg., Montreal, Canada.

GARBAGE FURNACES.

Henry W. Atwater, 72 Imperial Bldg., Montreal, Canada.
Dixon Garbage Crematory Co., Toledo, O.
Thackeray Incinerating & Fertilizing Co., Singer Bldg., New York.

HORSE COLLARS AND HARNESS TRIPS.

John A. Weider, Rochester.

INSPECTORS.

W. R. Conard, Burlington, N. J.

INSULATED WIRES AND CABLES.

Montauk Multiphase Cable Co., 100 Broadway, New York.
Okonite Co., 253 Broadway, New York.

IRON WORK.

J. L. Mott Iron Works, 84-90 Beekman St., New York.

MAIL CHUTES.

Cutler Mfg. Co., Rochester, N. Y.

MASTIC.

Assyrian Asphalt Co., Chicago.

METER TESTING APPARATUS.

Pittsburg Meter Co., East Pittsburg, Pa.

NOZZLES.

Henry W. Atwater, 72 Imperial Bldg., Montreal, Canada.
Fire Extinguisher Mfg. Co., 325 S. Desplaines St., Chicago, Ill.
New Jersey Car Spring and Rubber Co., Jersey City, N. J.
New York Nozzle Co., 40 Wall St., New York.

PAINTS, ASPHALT.

Assyrian Asphalt Co., Chicago.

PIPE, SEWER AND CULVERT.

H. Stevens' Sons Co., Macon, Ga.

PIPE COATINGS, HOT.

Assyrian Asphalt Co., Chicago.

PUMPS, CONTRACTORS' DRAINAGE AND SEWERAGE.

Edson Mfg. Co., 132 Commercial St., Boston, Mass.
Maslins, 165-197 First St., Jersey City, N. J.

RUBBER TIRES.

Consolidated Rubber Tire Co., 40 Wall St., New York.

ROAD MACHINES.

O. S. Kelly Co., Springfield, Ohio.
F. C. Austin Mfg. Co., Harvey, Ill.
Austin & Western Co., Ltd., Chicago, Ill.

ROCK DRILLS.

T. N. Motley Co., 43 John St., New York.

ROLLER BEARING AXLE.

Grant Axle & Wheel Co., Springfield, O.

ROCK CRUSHERS.

Austin & Western Co., Chicago, Ill.

SMOKE PROTECTORS.

Vajen-Bader Co., Indianapolis, Ind.

SPRINKLING CARS.

American Car Sprinkler Co., Worcester, Mass.
The Miller Knoblock Co., South Bend., Ind.

STEAM FIRE ENGINES.

American Fire Engine Co., Seneca Falls, N. Y., and Cincinnati, O.
La France Fire Engine Co., Elmira, N. Y.
Manchester Locomotive Works, 40 Water St., Boston, Mass.

STREET-CLEANING APPARATUS.

F. C. Austin Mfg. Co., Harvey, Ill.
Austin & Western Co., Ltd., Chicago, Ill.
Thornton N. Motley Co., 43 John St., New York.
Henry B. Walker, 208 S. Wayne Ave., Dayton, Ohio.

STREET CONTRACTORS' SUPPLIES.

F. C. Austin Mfg. Co., Harvey, Ill.
Austin & Western Co., Chicago, Ill.
O. S. Kelly Co., Springfield, O.
T. N. Motley Co., 43 John St., New York.

STREET SWEEPERS.

F. C. Austin Mfg. Co., Harvey, Ill.
Austin & Western Co., Chicago, Ill.
Charlton Mfg. Co., New York.
H. B. Walker, Dayton, O.

STREET LAMPS.

Thos. T. W. Miner, 821 Eagle Ave., New York.
Pennsylvania Globe Gas Light Co., 248 North Broad St., Philadelphia, Pa.
Welsbach Street Lighting Co., 246 N. Broad St., Philadelphia, Pa.

STREET SPRINKLERS.

American Car Sprinkler Co., Worcester, Mass.
F. C. Austin Mfg. Co., Harvey, Ill.
Austin & Western Co., Ltd., Chicago, Ill.
Miller Knoblock Co., South Bend, Ind.
Studebaker Mfg. Co., New York.
Winkler Bros., South Bend, Ind.

STONE PAVEMENTS.

Claflen Paving & Contracting Co., Cleveland, Ohio.

SEWER TILE.

National Web Tile Sewer Co., Syracuse, N. Y.

UNIFORMS.

Mark Cowen, 22 W. 4th St., New York.

VOTING MACHINES.

U. S. Voting Machine Co., Jamestown, N. Y.

WATER FILTERS.

Continental Filter Co., 44 Wall St., New York.
O. H. Jewell Filter Co., Chicago, Ill.
New York Filter Mfg. Co., 120 Liberty St., New York.

WATER METERS.

Buffalo Meter Co., 363 Washington St., Buffalo, N. Y.
Pittsburg Meter Co., East Pittsburg, Pa.
Thomson Meter Co., Brooklyn, N. Y.

Expert on the Cost of Gas.

William Henry White, one of the best known gas engineers of this country, is quoted as follows:

Taking a ton of coal as a basis the direct and by-products may be easily calculated. It produces about 10,000 feet of gas and, as residuary products, about twenty bushels of marketable coke, twelve gallons of tar and twelve gallons of ammoniacal liquor, which, when properly treated, will make about five pounds of the commercial article. All of this, except the gas, formerly went into the river; now it brings: Twenty bushels coke at 6 cents, $1.20; twelve gallons tar at 2 cents, 24 cents; five pounds ammonia at 5 cents, 25 cents; total, $1.69. And this sometimes runs up to $2 for the various products. Add to this $5 for the 10,000 feet of gas and we have, even at the low figure of 50 cents a thousand, about $7 for the ton of coal, which costs in the gas house about $3.25.

In other words, where coal costs $3.25 a ton and $2 can be realized on the residuary products, 10,000 cubic feet of gas is made from a net expenditure for coal of $1.25. The item of coal expense is therefore 12½ cents per thousand feet of gas, which if sold at 50 cents, allows 37½ cents per thousand feet for labor, fixed charges, profits, etc.

Tuberculosis in Milch Cows.

The health department of Indianapolis, Ind., not long since was applied to by the owners of herds of cows from which was procured the milk supply of that city, for certificates of health for their herds with especial reference to tuberculosis. The health officer agreed to issue such certificates provided all cattle found to be infected with the disease should be killed. More than 1,700 cows were examined for tuberculosis; nine per cent. were slaughtered and a post mortem examination in each case did not fail to locate the seat of the disease.

Another illustration of this particular disease has recently been given in Chicago, where some cows were killed at the stock yards. Governor Tanner, of that state, gave his personal attention to the matter and afterward said: "My observations lead me to believe that it is unsafe to drink milk which is not known positively to be non-tuberculosis. The cattle which I have seen slaughtered and dissected to-day, and which I saw were saturated with tuberculosis, ten days ago were furnishing milk to my family. I did not institute this investigation. I had no reason to believe that the milk sold me was otherwise than pure. The fact is that, like thousands of others who drink milk, I never questioned its purity. And there is the secret of the official negligence which has permitted this disease to make this progress. I am glad my eyes have been opened. The recent awakening of public interest on the subject will have practical results."

—The board of public works of Columbus, Ohio, has purchased from the Austin & Western Co., of Chicago, ten street sweepers and four 600-gallon sprinklers. This will furnish the uncleus of the new street cleaning plant to be operated by the director of public improvements.

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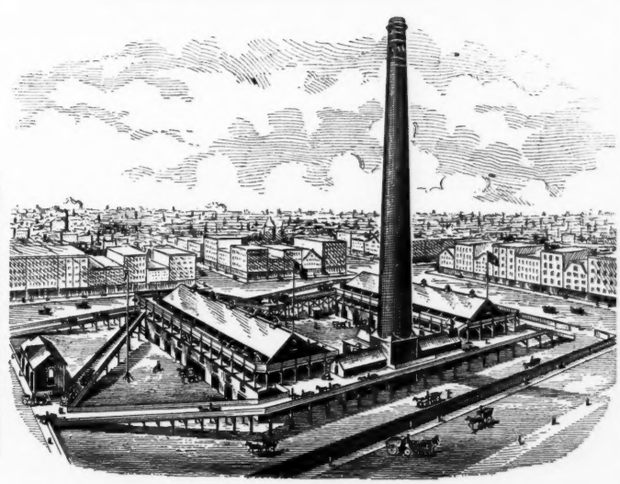

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Resolution Adopted by the California State Board of Health in Reference to the Thackeray Incinerator at San Francisco.

WHEREAS, a careful and exhaustive investigation into the mode of operating the Incinerator lately constructed by the Sanitary Reduction Works Company, at the intersection of Rhode Island and Alemada Streets, in the City and County of San Francisco, having convinced us that the refuse heretofore deposited at designated places in said City and County to the great detriment of the public health and in defiance of all the principles of sanitation, is now being disposed of in a clean and healthful manner and without perceptible odor; and

WHEREAS, knowing that reduction by fire, the method employed by the Sanitary Reduction Works, is the only thoroughly scientific way of disposing of the refuse and garbage of a city, and it having been demonstrated to us that the Incinerator constructed by the said Company, at the intersection of Rhode Island and Alameda Streets, in the City and County of San Francisco, is the most effective device yet invented for the reduction of refuse and garbage by fire, and that the said Incinerator is capable of burning all the refuse and garbage which will be produced in the said City and County for some years to come, it is

Resolved, by the State Board of Health, that the Incinerator constructed by the Sanitary Reduction Works as aforesaie, be, and is hereby approved and indorsed as the greatest sanitary importance to the City and County of San Francisco, and its population.

Resolved, that in our opinion the Incinerator aforesaid disposes of refuse and garbage in a thoroughly scientific manner and so as to create no odor, or so as not to be in any way detrimental to the public health.

Municipal Monopolies.

City officials will be particularly interested in the new book, "Municipal Monopolies," edited by Edward W. Bemis and published by Thomas Y. Crowell & Co.,100 Purchase Street, Boston, Mass. The book deals with the various public service industries, giving recently compiled and authentic statistics in reference to the cost of their operation under both private and public ownership. Four of the nine chapters are the work of Professor Bemis, the subjects receiving his attention being "The Latest Electric Light Reports," "Street Railways," "Gas," and "Regulation or Ownership." Mr. M. N. Baker, of the "Engineering News," furnishes a chapter upon water works; Prof. John R. Commons, Syracuse University, and Prof. F. A. C. Perrine, of Leland Stanford University, discusses electric lighting; Max West, of the agricultural department of Washington, describes New York city franchises; and Prof. Frank Parsons treats the telephone and the legal aspects of municipal problems. Altogether the book is a production of the utmost value to students of municipal affairs, and it should be in the library of every person in public service. Price, $2.00.

Municipal Crematory.

Bostonians are now taking steps to procure a municipal crematory—not for garbage, but for human bodies. A petition asking for the establishment of one by the city was presented to Mayor Quincy recently. It contained the names of about 400 signers, including prominent clergymen and members of the medical profession.

The petitioners are moved by the purest of motives, wishing only to advance the cause of good health. They ask that the city build a crematory where such as wish may secure the burning of bodies at cost. The only crematory now in use in Boston is at Forest Hills, and is operated by a private corporation. The petitioners feel that the charges of this institution are beyond the means of such of the poor as desire this method of disposing of the remains of the dead.

—Health Officer Goler, of Rochester, N. Y., will establish five sterilized milk stations for the heated term.

—The street cleaning department of Portland, Me., has made an innovation which has been tried successfully in other cities. They have placed at convenient street corners and other points in the city large wooden buckets in which all rubbish is to be deposited. This is expected to rid the department of much work in picking up waste paper and other debris from the pavements, and its is hoped that all citizens and visitors as well will co-operate in this attempt at keeping the streets clean.

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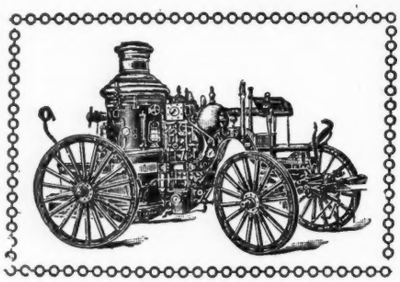

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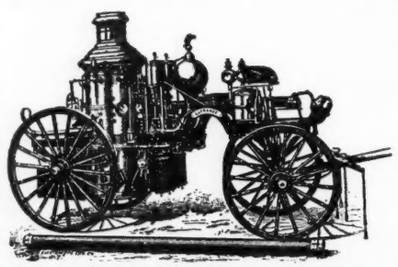

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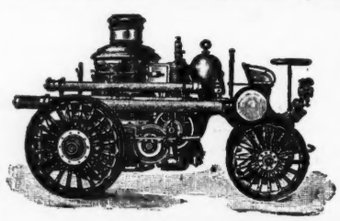

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